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Telecom builds 'trap' for data callers

By Luis Huesch

TELECOM's research and development branch has built a prototype of equipment designed to differentiate between voice and data traffic on switched telephone lines — a key piece of gear to have if the carrier wants to start charging local calls at differential rates.

Telecom manager, legal and policy, Jim Holmes, said he was not in a position to answer specific questions about the subject but added that the commission had "put in an effort" to deal with what he described as a significant problem.

He expected the commission to make an announcement on the issue "in the first half of 1987," but hoped it would come rather sooner.

Meanwhile, timed local *voice* calls — if and when it is deemed politic to introduce them and bring Australia into line with most other OECD nations — could come with a bonus for speedy callers: according to one scenario being mooted by Telecom planners, calls under a possible three-minute limit might cost only 12¢ instead of 18¢.

Holmes said there was a clear need for charging "or somehow structuring this (data use of untimed local calls) so the other users of the network are not inconvenienced". He said some businesses appeared to be taking advantage of what was essentially a socially-priced service to set up a cheap "leased line". Some smaller exchanges were getting squeezed for switching capacity, and it was beginning to affect even Central Business District exchanges.

According to Holmes, some users are holding phone lines open for days or weeks for use as data lines. But even data calls of 20-30 minutes were having an impact on smaller exchanges.

"After all, the network was really built around three-minute calls (and) we have socially-priced untimed calls," he said. The long holding of lines was causing a "sig-

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DATABASE hosts, and bulletin board service (BBC) operators like Bill Bolton (pictured), are worried by Telecom's purported plans to curtail local data calls. "Bulletin board systems provide useful social and community service . . . (and) are a legitimate use of the public switched telephone network," says Bolton, who operates a Sydney node in an Australia-wide BBS network that also links to overseas operators. He presents the BBS side of the argument on page 6.

Aussat sets up in Vsat market

AUSSAT is casting about for customers to trial its new Starnet private satellite-based telecommunications network system, aimed at companies needing data, voice and video communications between head office and branch offices or remote locations.

When the carrier announced the service last month, it was still talking to potential users to take part in the free pilot service, due to be in operation by mid-year. Aussat managing director Graham Gosewinckel said the carrier was hoping to attract a big bank to sign up for the trial, intended to "provide an operational demonstration to other potential users".

■ Vsats to rescue — p8

Announcing Starnet, Gosewinckel said the company thought the service was so innovative that customers would need help to assess its potential value to their business. "Accordingly, Aussat will introduce the service via a small pilot Starnet with selected customers to provide an operational demonstration to other potential customers," he said.

Marketing manager Colin

(Continued page 6)

Honeywell's Tran$end godsend

AFTER a period of gestation seen by some as deliberate fence-sitting Telecom has finally announced its new electronic funds transfer network — and is asking banks with gateway equipment in Telecom exchanges to make room for the system's new network access controllers.

Commenting on the announcement of Telecom's cutely named Tran$end service, manager of dedicated network marketing Andrew Lockwood said discussions with the banks were progressing quite well and he expected most would join the new service.

At present only one bank, the ANZ, has signed up for the Tran$end service, which uses the Austpac network for transaction transmission via Honeywell network access controllers. Telecom is ordering an initial $A13-14 million worth of the controllers, for which Honeywell won a tender against competition from more than 10 potential suppliers.

Asked about the major banks' existing JNA-supplied Canadian multiplexers now deployed in Telecom exchanges on EFT/POS duty, Lockwood said the new equipment was "cheaper to run" than the banks' existing equipment. He rejected suggestions that Telecom had pressured the banks by reneging on maintenance agreements, saying there had always been a "sunset clause" on site rental and maintenance by Telecom. The banks had until 1990/91 to "migrate to the new equipment", Lockwood said.

■ EFT/POS planning — p11

Telecom is dangling the carrot of "low cost and high performance communications between EFT/POS terminals and financial service providers" to entice the banks aboard Tran$end. It claims the service and sophisticated network management will be capable

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Hacker panic hits Minerva

SYDNEY — An unidentified user with an apparent grudge against Minerva's sometimes sluggish responses hacked his way into the OTC's electronic mail system over Christmas, setting up a fake parallel system that could have trapped legitimate users' passwords.

The commission sent out warnings to the 204 users who read a purported OTC message about the establishment of a new, faster system called "Minerva Pseudo", telling them the initial announcement did not come from OTC, and urging them to alter their passwords immediately.

The unidentified hacker sent out between 800 and 900 messages just before Christmas announcing the purported new service, using the mailbox of an OTC Minerva manager, Alan Curtis. He or she entered Minerva via the mailbox of Perth consulting company Earth Energy Resources to carry out what OTC corporate PR manager Peter Shore described as a "fairly sophisticated manipulation of the service".

The hacker then transferred command files into the OTC manager's box to set up the fake system. Instructions on how to use the purported parallel system — claimed to have been set up on new computers following user complaints about poor response times — included a request to sign on with the user's own legitimate password.

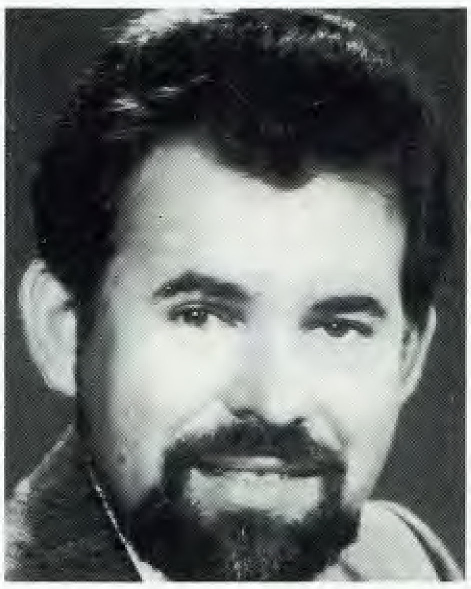
It was not clear whether the operation was designed to entrap passwords, but Shore said the commission had taken steps to guard against a repetition of the incident. He said OTC's systems programmers had altered the Minerva software so that type of manipulation could not happen again. Shore said the OTC system was as safe as any, and that no-one could make a system totally secure.

Asked whether he thought competitors might be behind the latest incident, Shore said he was in no position to speculate on this, but added that he did not think so. (A US-based telex services vendor caused a stir at the 1986 Atug conference by reading out what he claimed to be OTC management electronic mail messages.)

An OTC internal investigation has provided only clues on how the fraud was perpetrated, but not the identity of the hacker — who spent a lot of time entering some 900 mailboxes to send them out in batches of about a dozen recipients each, but was less careful with his or her spelling.

In fact it was the innumerable spelling mistakes which caused this writer to contact OTC at once to query the authenticity of the message, thus triggering the investigation.

Engineering database on videotex



Mike Piatek . . . 4GL "first"

WOLLONGONG, NSW — A national videotex and database service for Australia's engineering industry has been established at the Illawarra Technology Centre, which is attached to the University of Wollongong.

The service, known as the National Engineering Information Services (Neis), provides a combined videotex system and online computer bureau service from the university's Sperry 1100 mainframe. All software for the system-was written in Australia.

In addition to the database, which contains information about more than 500 companies, products, tenders and pricing, Neis also acts as an information processing service, offering software for such diverse applications as steel estimating or general accounting.

Mike Piatek, managing director of National Engineering Information Services Pty Ltd, said that large companies could contact the mainframe directly using Sperry's Mapper fourth generation language to obtain information. "This is the first time in the world that Mapper has been interfaced with a public access videotex system," Piatek claimed.

"We believe it may be the first time that any 4GL has been interfaced with such a system."

Neis can also be accessed from most personal computers equipped with a modem and Prestel software, or from a videotex terminal. Direct dialling is available now, and Viatel connection will be possible in March, Piatek said.

Financial backing for Neis has been obtained from Westpac, with joint sponsorship by BHP, Unisys and the University of Wollongong.

Fibre optic Lan 'beats Ethernet'

CW International News Service

HYANNIS, Mass — US comms gear maker Fibronics has announced a fibre-optic network said to link multiple local area networks or mainframes at 100M-bit/sec — 10 times the data rate on Ethernet Lans.

System Finex has a token ring architecture and can serve as a backbone network to Lans based on IBM's Token Ring network or on Ethernet, the company said.

System Finex reportedly will support up to 500 workstations and is an order of magnitude faster than Ethernet: it takes three hours to transmit a weather satellite picture over an Ethernet network, but only 1-1/2 minutes with the Fibronics network, the vendor claims.

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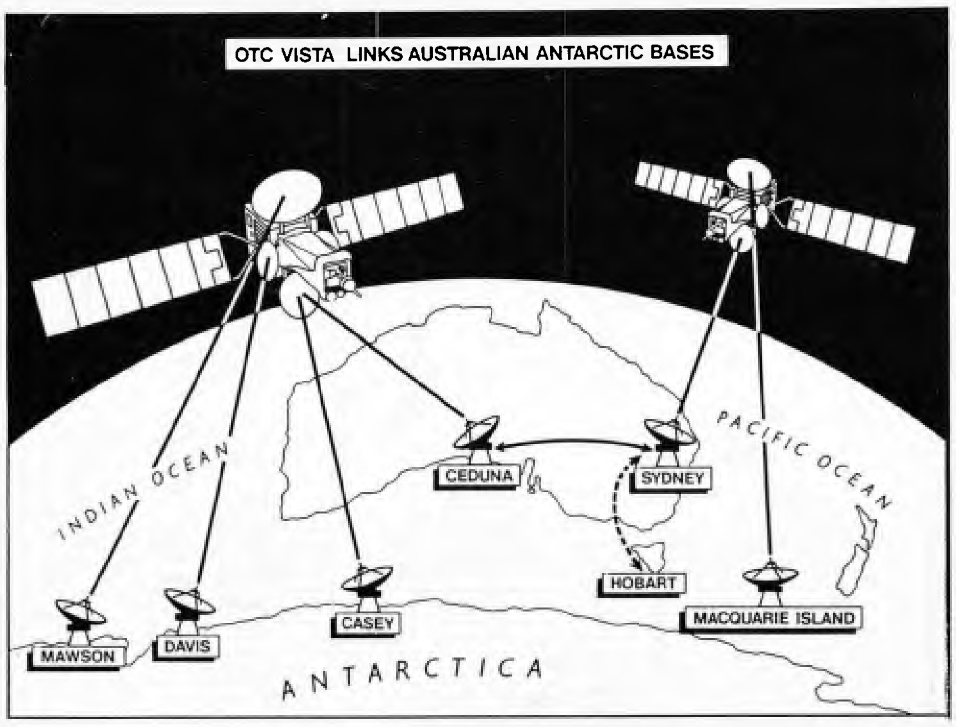

OTC scores top Intelsat channel to Antarctica

AUSTRALIA will be the first of 13 nations exploring Antarctica to get a top-notch satellite communication channel to its four bases via the Intelsat Five satellites in the Indian and Pacific Oceans.

The link being installed by the Overseas Telecommunications Commission (OTC) replaces high-frequency radio communications that are susceptible to interruption through solar flares.

Called Anaresat (for Australian Antarctic Research Expeditions Satellite), the $A4m link will provide around-the-clock high quality direct telephone, telex, facsimile and data connections to the Davis, Mawson, Casey and Macquarie Island bases once installations have been completed by the end of next year.

The bases will each have a 7.3m antenna housed in a protective radome and connected to a local PABX. Current planning is for one voice and one data channel each, plus a standby spare, but total capacity of each earthstation is 16 channels. Slow digital data streams are multiplexed into a 4.8-bits/sec stream and converted into an analogue signal by modem for processing and transmission to the satellite together with analogue voice. Most of the earthstation equipment is being supplied by NEC, with communications gear from Case and Datacraft.

All bases except Macquarie Island will link up with the OTC earthstation at Ceduna. Macquarie Island, the last to be connected, will link with the new OTC earth station in Sydney. Broadband terrestrial links will carry all traffic to the OTC international gateway in Paddington, Sydney, from where it will be routed via leased line to the Antarctic Division headquarters at Kingston, Tasmania.

Supermicros to link Australian Airlines

AUSTRALIAN Airlines is to link its Melbourne head office and State branches in a network of multi-user supermicros over the next few months for a new office automation system designed to streamline operations.

The company's manager, computers and communications, Bill Chatham, said the system would consist of some 40 Altos multi-user machines with "a couple of hundred terminals at least".

Australian Airlines had spent about a year "extensively evaluating the system" for its needs and had installed a pilot system at its headquarters. He expected to get approval in the next two months to equip the State branches, which would then be linked to head office.

Initially, the network will use dial up lines, but Chatham said he expected to use Austpac eventually.

The multi-user machines are capable of being networked not only among themselves, but with an addon card and PC Path software can support personal computers, too.

Chatham said that for the first time, Australian Airlines had been able to receive extremely complicated WP documents online from the US, such as the 737 manuals from Boeing, and convert them to its own inhouse format before printing them on a HP laser printer.

"The system we have chosen offers integrated office automation . . . together with networking and complete communications capabilities, both to mainframes and personal computers," he said.

The new systems would be connected by integral local area network facilities at each branch. "Eventually, we will link up all branches to an Australia-wide administrative network and for a complete distribution network," Chatham said. Initially, traffic between branches and to head office would be in batch mode at 1200bit/sec via telephone lines.

New standards group

By Peter Scott

MELBOURNE — An independent body has been established to provide Australian industry with information on international communications standards and protocols — and the country's existing standards watchdog, which has extensive expertise in the area, has been forced to play a secondary role.

The National Protocol Support Centre has been set up in Melbourne with financial support from Telecom Australia, OTC, Csiro, the Australian Information Industry Association, the Federal Department of Industry, Technology and Commerce, and the Victorian Department of Industry, Technology and Resources.

The centre's interim chief executive officer, Gary Dickson, said the prime purpose of the centre was technology transfer in the area of communications standards, such as Open Systems Interconnect (OSI) and ISDN.

"We want to transfer knowledge of overseas developments to Australian industry," he said. "To do that we will develop information and technology support services which will be supplied to industry on a commercial basis."

The Standards Association of Australia (SAA), which already works closely with the International Standards Organisation, has no formal link with the centre, although it hopes to become part of a mooted advisory committee.

The SAA apparently did not become a founding member of the centre because of the cost involved in attaining full membership.

Peter Walsh, group manager of the SAA's electro-technology division, said the association has had numerous discussions with the centre's board members. "We support much of what the centre is doing and what it stands for. We hope we will work well with them and they with us," he said.

Walsh noted that there were possible areas of friction and duplication of effort but added: "We are negotiating so that will not occur."

One area of possible contention is in the selection of standards to be implemented. Walsh noted that standards approved by the SAA are based on international standards, but have adjustments to fit Australian conditions and usage. "For example, the implementation of OSI in Australia requires the addition of Australian options."

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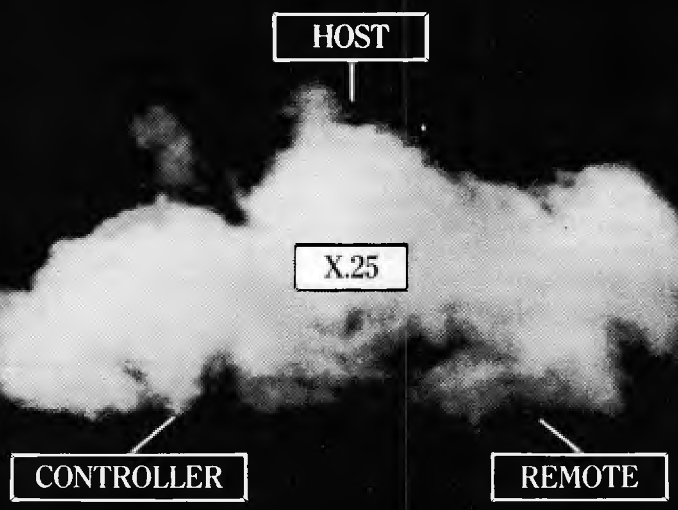

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Tran$end the godsend . . .

(Continued from page 1)

of supporting the 50,000 to 100,000 terminals that might ultimately be on the network.

Announcing the service, Telecom managing director Mel Ward said the new service would provide "flexibility to financial institutions to decide their desired method of operations since it will support both gateway and shared common access modes".

Australia's "big four" of banking now operate their own gateways, with all transactions from retailers going through the retailer's own bank. The shared common mode consists of links from retailers into the network, with transactions routed directly to the client's bank. This is the "open" mode preferred by the building societies, but it is a more costly solution.

Lockwood therefore expects a hybrid system to develop, with the smaller players adopting a joint gateway approach.

Ward said the service was the first of its type and its progressive introduction this year would be closely watched by other countries, particularly in Europe and Asia. Australia was "recognised as a world leader in EFT/POS developments even now, he said.

Discouraged perhaps by its debacle with the Computerphone, Telecom will not enter the EFT/POS terminal market, at least not initially. "Telecom will not be a terminal supplier initially," the announcement stipulated. Instead, Telecom has asked a number of terminal suppliers to develop equipment to interface with Tran$end. Ward said once the equipment had proven itself on the Australian market, it could have export potential.

He said the Honeywell equipment was selected as the most suitable for Telecom's network requirements, more than 70 per cent of the initial order would be built in Australia, and the percentage was expected to rise in follow-up orders. Again, there would be "significant" export opportunities. Tran$end is to be expanded ten-fold from an initial 120 network access controllers (Nax) to about 1500 over the next few years, with Telecom placing a Nax in about a quarter of all exchanges.

About 10 Naxs will be delivered each month from this autumn under the initial order. Eventually Telecom may spend as much as $A100 million on the service — if customers flock to Tran$end as hoped.

The network would allow a big expansion in the range and quality of Electronic Funds Transfer customer services. It was designed to carry transactions from both large and small retailers to a wide range of financial service providers, from banks to building societies and credit unions, Ward said.

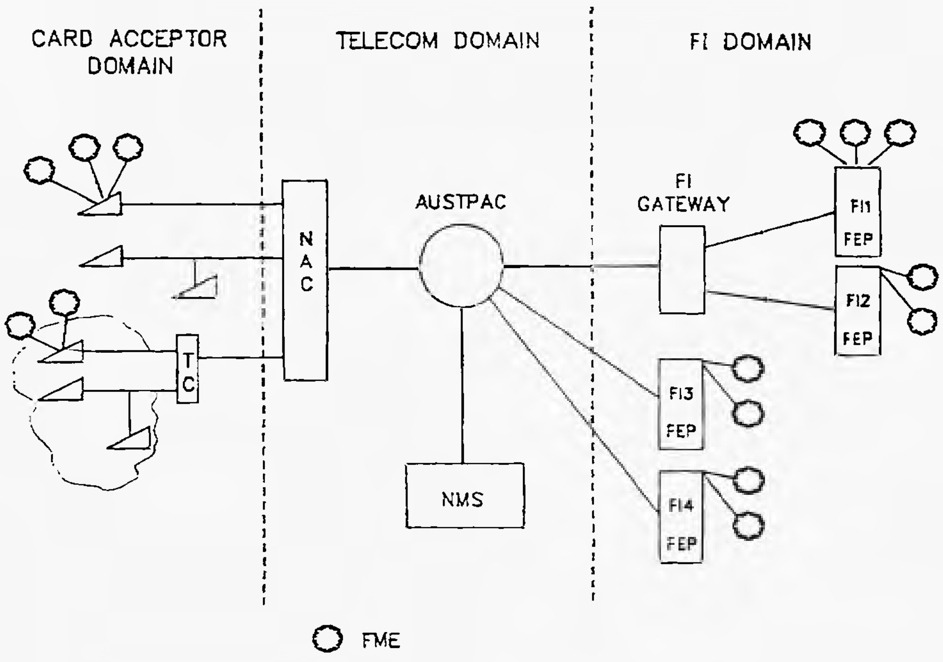
Peter Frueh, Telecom manager of switched network services, said the ANZ had signed for "thousands of services" with Tran$end.

Asked about possible costs and charges for the Tran$end service, Frueh said Telecom was discussing a number of options with potential customers because of the very specific requirements of large users.

But while it was open to suggestions from potential clients, Telecom had some preferred options. These included a mix of fixed and usage charges such as access charge of "well under $A1000 a year" including "a few cents per transaction", and a "significant but not overwhelming" charge for network management. This was not part of the switching service, but performed by software which looked after terminal addressing and transaction routing for clients.

Frueh suggested that customers with fewer than, say, 500 terminals might look outside for terminal management, perhaps through an umbrella service provider.

An overview of the EFT/POS network



LEGEND: NMS — Network Management System. FME — Financial Message Entity (Software in banks or cash registers)

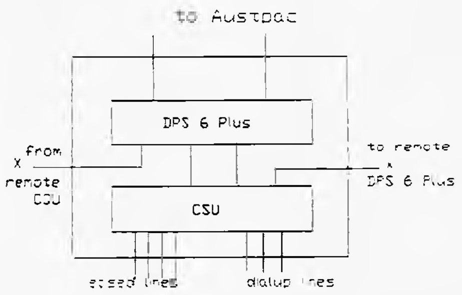
THE NAC COMPONENTS

THE NACs (Network Access Controllers) are the network nodes geographically dispersed to provide local connections to the POS terminals on merchant premises. Initially sited in local Telecom exchanges, they may later also be placed on customer premises, such as shopping malls.

A NAC consists basically of a Honeywell DPS 6 Plus, an enhanced version of the vendor's departmental mini, allowing multiprocessing and running a new operating system, HVS.

The 6 Plus is responsible for the overall control of the NAC and carries out name-to-address mapping and relaying messages between POS terminals and the financial institution concerned. It is linked to the Austpac network and to both local and remote Communications Server Units (CSUs).

These frontend processors in turn are connected to customer premises equipment by leased and dialup lines, as well as to remote DPS 6 Plus minis. This arrangement achieves a measure of fault-tolerance, because each client is linked into the Tran$end network through two different NACs.



THE new financial offering will serve as a model for Telecom's planned new asynchronous backbone service for value-added services networks, Vasas which is to provide carriage for third-party vendors from next December.

Telecom's switched networks manager, Peter Frueh said the commission was still finalising details of Vasas in talks with the online industry, including the Australian Videotex Industry Association (Avia).

As planned now, Vasas will not be modelled on existing international services but rather on the Tran$end example and use Austpac to service asynchronous videotex and Ascii terminals.

Frueh said Telecom intended to charge around $6-7/h for access. Avia had pushed for volume and speed-insensitive tariffs, he said.

Asked about potential capacity bottlenecks on Austpac, what with Tran$end, Vasas and its other users, Frueh said the packet-switching network had been expanded and now had ample capacity. If necessary, Telecom would put in a few concentrators — perhaps even Honeywell gear similar to the Tran$end equipment — which would reduce port requirements by a factor of 20 to one.

MCI goes for private nets

By Pam Powers

MCI Communications Corp may soon abandon its floundering Datatransport public packet-switching network business in favor of building private packet nets. Bob Yudt, director of data communications services at MCI, hinted that the company could sell private packet networks in conjunction with an equipment vendor.

Analysts said Datatransport had fallen short of MCI's expectations in its two years of operation, and it would come as little surprise if the company dismantled the service.

Datatransport was aimed at high-volume users.

According to Yundt, MCI signed about six large customers in two years — the first being Security Pacific National Bank, based in Los Angeles. "We were treading water for a while," Yundt said. "People liked the idea of a virtual private network, but they were sceptical about using MCI, since at the time we had no reputation with data services."

- *Pam Powers writes for Network World, our US sister publication.*

Telecom builds a trap

(Continued from page 1)

nificant problem of switching and signalling capacity".

Holmes agreed there were some hard technical issues involved but said Telecom had made an effort to solve the problem. (One industry watcher ventured to state it was difficult to see how Telecom could enforce any possible regulation banning the use of voice lines for data calls.)

But a potential clue emerged in a recent Telecom advertisement calling for expressions of interest to build special exchange equipment designed to monitor each line against faults and the "improper use of network components".

It appears that this tender referred to remote monitoring and access equipment that allows Telecom to reconfigure trunk routes remotely — yet the choice of words implied more sinister possiblities.

Only sketchy details about the new gear could be prised out of Telecom; the R&D branch denied any knowledge of the project. However, discreet enquires disclosed that the R&D boys had in fact built prototype equipment to differentiate between voice and data use on PSTN.

Knowledgeable Telecom sources said the monitoring equipment used statistical analysis of line traffic, making use of the different patterns apparent on the line

But although the technical side has come up with a solution, Telecom is "not ready to do it yet" and may not wish to introduce the technology at all, according to the sources.

One reason is that enterprising manufacturers could quickly launch equipment to foil such statistical monitors — imagine an active radar detector going out to scramble the signals intended to trap the driver.

And ISDN will introduce a whole new charging scenario, complete with bandwidth-limiting equipment that will make Telecom's regulations stick. Telecom has already stated its policy of charging for bandwidth rather than line use under ISDN.

With the introduction of the Integrated Services Digital Network — for which a first inter-city 140M-bit/sec fibre-optic trunk was installed last month between Sydney and Canberra — the whole analogue charging quandary will become largely academic.

The sources pointed out that under ISDN, the calling device will simply make a request for service, and Telecom equipment will route and treat it accordingly.

Sprint to bid for contract

By Karyl Scott

WASHINGTON — The US General Services Administration, a government agency looking after Federal equipment and services spending, has issued a formal request for proposal (RFP) for the planned $US4500 million Federal Telecommunications System (FTS) 2000, an all-digital network expected to save the government $US100 million a year when completed.

Soon after the RFP was issued, General Motors subsidiary Electronic Data Systems (EDS) joined forces with alternative carrier US Sprint to bid for the 10-year contract. EDS would serve as the prime contractor, developing specialised software as well as a network control centre, with US Sprint providing switching transmission services through its fibre-based digital network.

The EDS/Sprint team is the third major alliance to announce its intent to bid for the FTS 2000 contract, the largest ever competitive tender of its kind.

- *Karyl Scott writes for* Network World, *our US sister publication.*

Two minutes may be too late

By Peter Scott

INFORMATION ONLINE 87

SYDNEY — The online database fraternity has taken a close look at the information it offers and has determined at last that quick and easy access to information is relevant only when that information is totally up to date — two minutes may be too late.

At the Information Online 87 exhibition in Sydney late last month the catchcry was "the latest". Its relevance was apparent on the displays of the several exhibitors who showed up-to-the-minute news services where the information was, as IP Sharp noted on its exhibit, "between 90 seconds and 90 days old".

Three new services — from AAP, from IP Sharp and from the recently privatised but still finding its way in the real world British Telecom — were in hot competition for the attention of the corporate executive wanting the very latest information on companies, on sharemarkets, futures or finance.

IP Sharp's offering of the Dow Jones News Retrieval Applications (which had been announced on the opening day of the exhibition) was so new that few details were available from the exhibit. Nonetheless, it was so impressive in its range that three subscribers had been signed up within the first 36 hours.

What is offered on the Dow Jones service through Sharp's international network includes commercial news from such illustrious publications as the *Wall St Journal* and *National and Business Finance Weekly*.

For the more laid-back executive there is also a sports roundup. For the serious market player a tracking facility allows users to create five profiles of up to 25 companies each and have them automatically watched and updated by the system.

If IP Sharp was somewhat dismayed at being unable to offer documentation to support its very latest offering, it could take a little consolation from the knowledge that British Telecom was just a pace or two behind. The newly privatised UK concern was showing its Hotline news service, for which it expects to have a gateway to the same Dow Jones service within a month or two.

But BT, it seemed, was here to test the waters rather than to enter a hard marketing campaign. BT's Hotline marketing manager, Dr Barbara Newman, admitted that she was here in a dual capacity — looking for an agent as much as she was looking for users for her service, which already offers news from the *Wall Street Journal*, *Marketing Week* and the UK's *Daily Telegraph*, as well as corporate market and telecommunications information from a variety of sources.

The addition of the Dow Jones Retrieval Service will round out the offerings to a comprehensive whole that seems hard to beat at present.

The other contender as a "hot off the news desk" corporate information provider was Australian Associated Press with its Flak Fury service, which scans items of local and international news (including, like its Dow Jones equivalent, sport as well as finance information) and offers a service that "tells you what you want to know today, when it happens".

Other offerings at Information Online tended to be somewhat similar to the offerings last year, but with additional services and more, much more, information.

The Kiwis, in an all-out effort to show that there is more to life than yacht races, returned in force to the Information Online exhibition with expanded services from the joint workings of the NZ National Library and the Department of Statistics and Information, which have been co-operating in the field of online services since 1984.

For the other exhibitors it was business expanding as usual. The range of databases and the information available continues to grow exponentially, it seems.

Joint attack on Pentagon

CW International News Service

WASHINGTON — An unusual alliance between a civil rights organisation and an electronic information trade group has begun a major political assault on the US Defence Department plan to regulate what it calls "sensitive information" available from commercial database services.

The Information Industry Association, representing online database vendors, has linked up with the American Civil Liberties Union (ACLU) in an attempt to counter the Pentagon's stated intention to limit access to information that, while unclassified, is deemed by the military to be of a sensitive nature.

The controversy was triggered by two related events: the creation of a new information security category called "sensitive but unclassified", and a Pentagon official's declaration last November that some controls would be placed on unclassified, online databases to protect sensitive national security information from disclosure to foreign adversaries.

Critics claim the Pentagon controls would also hurt the business of information vendors. "Citizens aren't going to be willing to tie into databases if they know the government is monitoring them. And if the data is not available to begin with because the government has classified it, you can't sell it to people," said one opponent.

A Pentagon official argued: "It's not the Defence Department's intent to restrict access to commercial or private databases. The new sensitive but unclassified information policy is intended to prevent the release of sensitive information that rightfully requires protection and to prevent it from getting into these databases in the first place."

SIEMENS

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Malpractice makes perfect

TELECOM will end up with almost half the Australian PABX market when the present flux of reregulation and vendor realignment abates in the next 12-24 months, the Yankee Group has predicted in a research report.

It said regulation had increased competition among suppliers, which benefited users in the form of better deals as well as better products, support and service.

The 146-page report details PABX technology, suppliers, user trends and significant issues such as the emergence of standards. it argues that as elsewhere, there is a great disparity between what vendors consider significant selling points of their gear, and what users expect from the equipment. Key features sought by users are reliability, cost-effectiveness, and basic telephony features, while vendors push advanced capabilities, including integrated voice/data switching.

These features are "creeping in as relatively important selection criteria, but at this stage they are clearly of secondary concern," the Yankee Group argues.

The report said the reregulation of the Australian PABX market "has benefited Telecom most handsomely". It argues that Telecom's move into the metropolitan private markets "constitutes unfair competition" because it is building on the lucrative government and semi-government market base, is the sole first- and second-level maintenance provider, and is the regulator-in-chief of the market. Accordingly, the report strongly argues for "a total separation of Telecom's various functions".

The report also attacks Telecom's continuing monopoly of the key systems or small business systems market, which it describes as highly lucrative and having a total value close to the PABX market itself. It said this ongoing monopoly over a market where distinctions between small systems and small PABXs proper are starting to blur is "inappropriate" and not in the users' best interests.

The Yankee Group estimates that at least 10 per cent marekt share is needed to cover the local manufacturing levels required of PABX suppliers. Yet a number of vendors hold less than this, and there is not shortage of potential new entrants because of the commercial advantages in the sophisticated Australian market for product testing and as an entry into the entire office automation market, the report argues.

It expects only a few newcomers in the market in the near future, with the most likely ones being British Telecom/Mitel, Northern Telecom, local startup Tytel with its distribution-function Lanex product, and smaller suppliers such as Melbourne-based Telephone Systems, tipped to sell the Israeli-made Tadiran products. Fujitsu, Olivetti/AT&T, Wang and GEC Marconi are also reported to have an interest in the local market.

The Yankee Group forecasts a number of departures, particularly in low-end systems, and an increase in joint ventures of various types. It expects the market to shake down eventually to fewer than the original seven PABX makers. The report is detailed yet concise in its treatment, and does not pussyfoot around hot issues. Recommended reading.

— ***Luis Huesch***

Social pricing for BBS, please

By Bill Bolton

MICROCOMPUTER-based Bulletin Board Services (BBS) provide a wide range of services to the community, from hobbyist systems aimed at home computer users to professional support systems for business computer users. Most BBS systems have time limits on the length of a call, most commonly 60 minutes.

The time limits are imposed to provide access to a reasonable number of callers per day. From my experience the average call to a BBS lasts about 25 minutes. Households with teenagers will know that voice calls often can widely exceed these times.

BBS systems on the whole are privately operated. Most are privately funded and even where commercial sponsorship or user charges are involved the system operator or "sysop" usually makes a substantial personal investment. Most BBS systems are free to users, while those which do charge for access usually do it on a flat annual subscription basis rather than time usage.

The charges generally are aimed at cost recovery rather than making any sort of profit. Again, in my experience with BBS systems that do have subscriptions, any "excess" from subscriptions invariably goes back into equipment to provide a better service.

Anyone who regularly calls BBS systems will have experienced the frustration of having to call in several times to get a successful connect. The cumulative local calls charges for the unsuccessful connects, which generally last only a few seconds, must be a significant contribution to Telecom's revenue, given the number of systems now in operation.

BBS systems provide useful social and community services. Telecom's pricing policies have long espoused the concept of "social benefit" in terms of how charges are levied. BBS systems are a legitimate use of the public switching telephone network (PSTN) by individuals, largely for their own private purposes.

Telecom Australia should ensure that any attempt to restructure the costing of data traffic across the PSTN for straight commercial data traffic does not affect the ability of individual users to gain access. Imposing extra charges on BBS systems as data destinations would immediately kill many systems.

- *Bill Bolton is senior software specialist with Netcomm Pty Ltd and one of Australia's oldest and most respected BBS operators.*

Aussat aims at Vsat market

(Continued from page 1)

Campbell said customers could arrange for Starnet service even now, without waiting for the pilot scheme. The only thing Aussat was still waiting for was hub station equipment and software from NEC.

The scheme, providing two-way communications via a 12-watt national beam transponder, hinges on customers sharing centralised hub facilities at Aussat's major city earthstations through tails to their head offices in the cities served. This saves on communications costs, because customers do not need to pay for their own hub stations. All the user needs is a small-dish earth station at branches or remote locations.

Starnet services will offer low-speed (9.6K-bits/sec) and medium-speed data (to 64K-bit/sec), as well as voice transmission and compressed video distribution.

For the pilot service, equipment including Vsats (very small aperture terminals) is to be supplied by NEC but Gosewinckel emphasised that Aussat has steered clear from limiting itself to any single supplier.

This was because users had a wide range of requirements, which were met by an equally wide range of features available from the various suppliers of hub and customer earthstation equipment. To limit the choice would not only hurt Starnet's commercial chances in the market, but "it could also damage the development of Australian industry by restricting the markets of other suppliers whose equipment may be a better match with certain customer needs," Gosewinckel said. Meanwhile Aussat has talked to an incumbent Vsat supplier on the Australian market, US company Skynet.

Aussat will provide full network support and operation, including maintenance, but customers may elect to maintain their own earthstation equipment.

Gosewinckel said the new service was intended to give customers a backup option for terrestrial services, and to provide service to remote locations where Telecom would find it difficult to supply connections.

Asked about interconnection to the public switched telephone network, Gosewinckel said not too many typical Starnet customers would need to interconnect. But in answer to further questions he hinted that Aussat might prevail upon its minority shareholder to provide interconnection on attractive conditions.

With its Starnet offering, Aussat is putting its foot in the door of a potentical lucrative market, which the Overseas Telecommunications Commission (OTC) is also trying to tap for its Satnet III Vsat business.

Much interest has been whipped up overseas with Vsat services — although the market has not fulfilled all of the vendors' expectations, particularly in the US — and the UK Mercury has launched a service similar to Starnet.

According to a study by Link Resources, an IDC subsidiary, the interest has been fuelled mainly by three factors:

■ The decrease in cost and size of satellite dishes;

■ The increase in leased-line charges which hits geographically dispersed networks hardest;

■ The availability of more powerful ku-band satellites for higher-speed data and video applications.

The factors which often swing a customer's decision to move from leased line to Vsat use include:

■ An existing network must be configured to a star topology;

■ The network must operate predominantly under a single protocol (an estimated 80 per cent of potential Vsat sites use IBM's SNA/SDLC);

■ The number of potential terminal sites must be greater than 50 at the very least and be geographically dispersed, and

■ There is inefficient utilisation of the user's leased-line network or

■ The user requires the safety net of a backup system.

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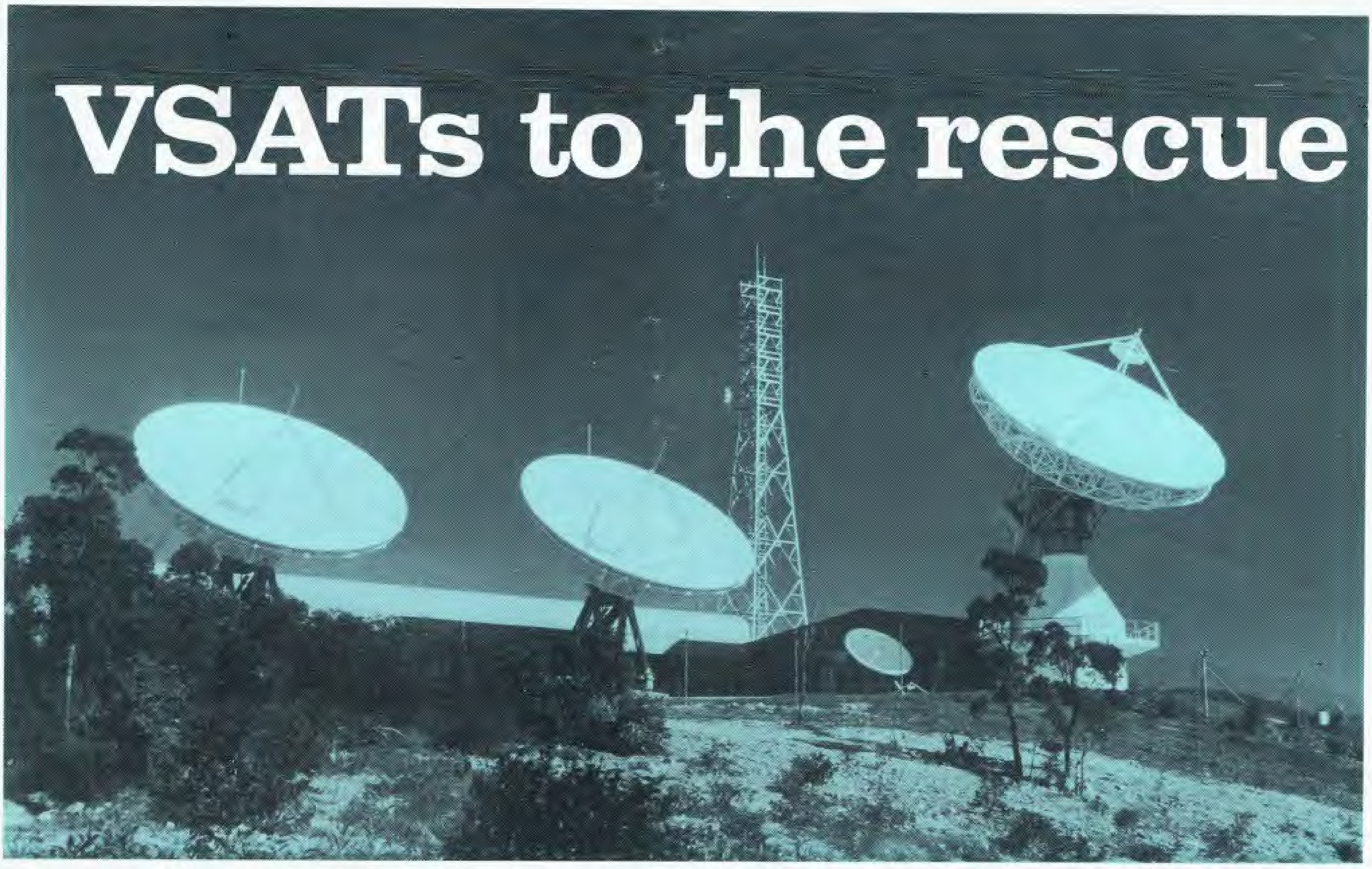
VSATs to the rescue

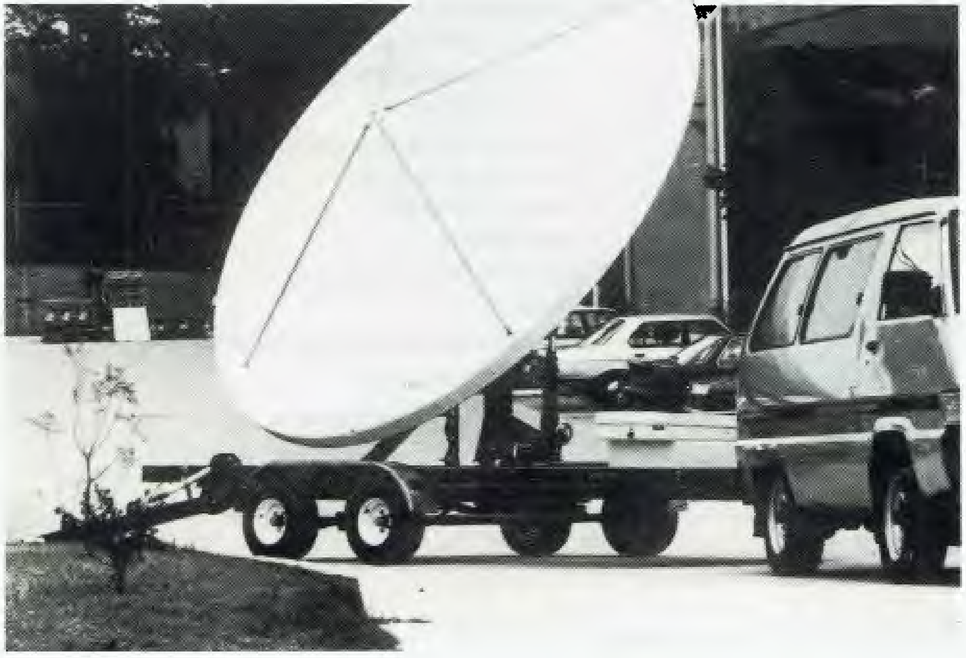


Vsat services are slowly sprouting in the land as a network alternative to terrestrial links. But access methods are complex and incorrect selection can impact both throughput and response times. Contributing Editor Tom Amos gives potential users of services such as the new Aussat offering, Starnet, a detailed rundown on small-dish networking considerations.

IF YOU have a distributed data network of over 20 or so sites then, after a quiet introduction, alternative methods for network construction are now available. A choice of transmission technologies which provide an end-to-end complete service, all involving the use of Australia's new satellite capacity, is either now available or will be available soon. Most communications managers are not dazzled by such technologies provided there is some base method of determining which of the computing technologies is the most apropriate system for use. The introduction to this new satellite-transmission technology, however, is not complex providing the analysis is approached from the network utilisation viewpoint rather than the gee whiz end. Back to basics and then some relevant points is probably the best plan of attack. But first some history.

The advent of satellite transmission in Australia has meant that some choice is available for mostly data communications service users. The satellite capacity provider is Aussat, a wholly owned government organisation whose charter is to provide, on reasonable request, satellite capacity to corporations and individuals who seek it. Within limits, both private and corporation satellite networks may be established with this capacity. Depending on the application these new-age networks may offer significant benefits to those who otherwise would use existing Telecom services to construct information highways.

Aussat until recently has been preoccupied with the establishment and sale of television capacity and has paid scant regard to these other new technology potential business services, leaving Telecom, the other domestic telecommunications provider, to attend fully to the market place with services such as DDS and Austpac.



Customer earthstations needn't be stationary. They can be lugged around on a truck as required.

While this placid scene has been slowly unfolding in Australia a number of overseas corporations have been developing useful cost-effective, satellite-based technologies to avoid the need for Telecom-like wire connections in an end-to-end communications service. The technology has been developed in the US and is known generically as Very Small Aperture Terminal (Vsat) technology. Vsats evolved from the original 0.6m Equatorial data broadcast satellite Vsats of early 1980 to sophisticated interactive data and sometimes voice terminals in 1987.

Thus a Vsat can be defined as an on-premises device which carries communications services to other locations within a network.

For Australian legal reasons the private network so constructed must be closed to only other members of the corporation. The Vsat net topology is of necessity a star to allow the reduction of the Vsat cost by providing a large central hub which is shared by remotely located Vsats. As a general rule, small remote terminals such as Vsats are not economic for voice-service provision except to the most remote locations. These remote applications, now extrapolated into corporate networks, are incorrectly perceived by system planners as a solution to all network problems.

To be a genuine Vsat the earth station should be small, roof mountable, easily transported and of low cost. The cost of installation and security means ground mounting may be expensive. The alternative to a Vsat is using terrestrial services, which in Australia cover most areas.

Tom Amos . . . "New technology always a challenge".

A number of technologies have been proposed by emerging Vsat suppliers to allow access to the broadcast satellite capacity available on the satellite. These range from the initial code division multipler access (CDMA) technique employed by Equatorial through single channel per carrier (SCPC), to time division multiple access (TDMA). Each technique has strengths and weaknesses but over 90 per cent of the Xmt/Rec Vsats installed throughout the world now use the CDMA system developed especially for Vsats.

Access method means the method by which individual user Vsat sites communicate with the network host. This technique varies considerably between networks and systems. Incorrect selection can impact both the throughput and response time of a proposed data network or processing application. The selection is especially critical for interactive application, where usually short messages originate at an infrequent interval at each user site on a random basis.

Only one hub transmits to all Vsats so that a standard time division multiplex (TDM) method is best. Conversely, many Vsats are transmitting to one master earthstation (MES) so that co-ordination is needed. Both frequency division/time division multiple access (FDMA/TDMA) and code di-

The march of technology to distributed processing

vision multiple access (CDMA) are access methods on these inbound channels. CDMA involves all the Vsats transmitting and listening on the same frequencies, only differentiated by a pseudo noise code from each other. There are variations on the FDMA/TDMA themes such as adaptive assignment TDMA (AA/TDMA), itself a variation of the slotted Aloha access scheme. The selection of the appropriate scheme is based upon the matching of network requirements to throughput and response time of the proposed methods.

In addition CDMA is the only method now in use which provides in the transmission medium a relatively secure transmission channel without the need for additional encryption. This comes from the use of unique codes which appear as noise to all other receivers.

In Australia the three major access techniques of AA/TDMA, TDMA and CDMA are available for Vsat operation from a number of suppliers.

How the various methods work

The data network constructed with Vsat technology is generally an asymmetric system, with a single large sophisticated hub station supporting many small, inexpensive remote Vsats. Data packets or slots originating from the hub station to a group of the Vsat stations share the same outbound carrier for each technology examined. Each piece of information is transmitted successively in a packet or slot multiplex manner. The remote Vsat checks the address field of all received packets or selects those in its assigned slot in each case, and if the contents of the address field match its own address, then it accepts the packets. Otherwise it discards them. This asymmetry extends to the links between hub MES and Vsat in transponder power and in access methods. Since, the Vsats have small antennas and transmit power levels, the inbound signals are relatively weak. The MES, with a large antenna and power amplifier, transmits a strong signal easily received by the small remote Vsat.

Satellite power is allocated predominantly to the outbound signal to keep the Vsats in touch with the hub and thus host computer in a data network under most propagation conditions.

The TDM outbound channel is normally a 56 to 512K-bits/sec continuous bit stream, consisting of concatenated, variable length data streams. The MES host connection ports are polled in a round-robin fashion, with each port allowed to transmit some or all of its queued packets before the next port is permitted to transmit. Each port transmits the packets in a first-come-first-served manner. An alternative outbound channel scheme is a statistical multiplexer which operates in addition to the slot-like systems of the TDM streams.

The inbound data network, from the Vsats to the MES, consists of multiple, independent TDMA, 56K-bits/sec bit streams in AA/TDMA. Inbound data is packetised and transmitted as bursts. The assignment of time slots, nine usually, in which each user is permitted to transmit a burst of traffic is centrally controlled at the MES hub and can be tailored to the needs of each user. In CDMA the inbound capacity is a function of the number of simultaneous transmissions required, as instantaneous transmission is available at moderate data rates. The three inbound multiple-access methods are available and they can be used in any combination. Determining the combination of inbound access methods best suited for a particular network involves trade-offs between response time and space segment (bandwidth and power) requirements. Poisson arrival of traffic and flow control at peak load determines when a network will fall over, at what load and the effects on response time (delay) as the network is loaded. Paper stats offered by the suppliers never address these network realities.

Response time is also a critical factor in interactive applications such as credit authorisation, ticket reservation and inquiry/response systems. Using the AA/TDMA collision-based, satellite-access scheme, the response interval between the remote terminals and the host computer can be minimised only with very small traffic (100 characters or less) which is not true of the other access techniques. Vsats in general are not good for block data transfer, as protocols applicable to such transfers are not useful in a satellite environment where satellite delay buffering is necessary. Vsats at high speed do not terminate a protocol and thus pass polls, Acks and Naks through space. Result: a real throughput stopper.

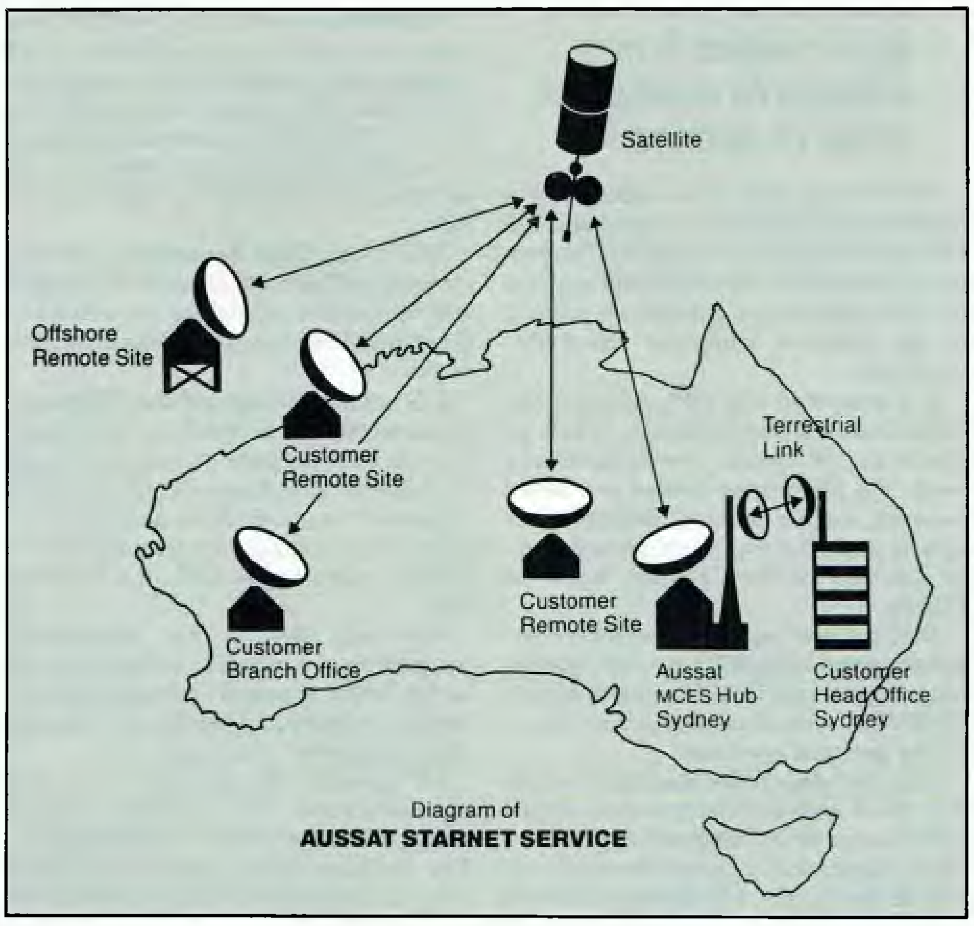


Diagram of **AUSSAT STARNET SERVICE**

Controlling access to a shared satellite channel from a large number of user-site earth stations is complex problem. Putting aside the technical issues of synchronisation, the logical network problem alone is significant because of the long (relative to the message size) satellite propagation delays typically involved. The simplest organisation — pre-assignment — is not acceptable because it results in excessive response times in large networks.

As an example, consider a network consisting of 1000 terminals sharing a 56K-bits/sec channel, and the average message size is 200 bits, or about 20 characters per terminal transmission. The complete rotation in TDM through all terminals would take nearly 3.2 seconds, with an average delay of about 1.9 seconds for transmission from a terminal to the central host location, including propagation time. The 95 percentile delay would be 3.3 seconds, including propagation time.

The simplest statistical satellite access methods are built on random transmission with provisions for error detection and retransmission. All of these methods suffer from poor transmission efficiency, as well as a significant probability that a message will need to be retransmitted because of "collisions" during the propagation interval. Among the best of these random transmission techniques is the AA/TDMA or Slotted Aloha. At an 8-10 per cent throughput, about 10 per cent of the messages must be retransmitted after a collision. Considering a typical Go-back-if ARQ with a window size of eight, more than half of the packets would have to be retransmitted since subsequent packets to the collided packet (sent until the acknowledgement is received) would also have to be transmitted. Using typical system parameters, this transmission failure rate increases the average transmission time by 40 per cent. The 95 percentile delay increases by 100 per cent.

In situations where better throughput efficiency is required, a reservation system may be used, at the cost of significant increase in delay. In such a hybrid arrangement, a portion or slot of the inbound channel is set aside for random reservation requests. This reservation channel is typically operated on a Slotted Aloha basis. Once the reservation request is received by the master controller, permission is granted to access a portion of the remainder of the inbound channel slots associated with that channel. Such channel slot access is usually by TDMA. While the performance of a TDMA channel depends on the particular parameters of operation, 50 per cent efficiency, combined with delays on the order of one to two seconds each way for communication of the message to the host, are typical. This low efficiency comes about because of a combination of interslot "guard" times, synchronisation preambles, and Fec coding. The delays cited assume that 8.5 to 17 per cent of a slotted 56K-bits/sec incoming channel is set aside for the reservation channel.

When technically possible, CDMA has significant advantages over both Slotted and TDMA for sharing a satellite channel among a large number of transaction terminals. This is because the only constraint imposed by a CDMA system is that the total number of simultaneous transmissions be kept below a specific threshold or beyond which the bit error degrades below the terminal BER. This is a far easier constraint to satisfy than in other access techniques, in which it is important that only one terminal is transmitting at every instant.

As a result, a large throughput performance can be obtained. For example, if the threshold occurs 70 at simultaneous messages, a throughput of 95 per cent can easily be obtained, with only about a 5 per cent chance that a message sent in the peak hour will suffer any excess delay. That is, 95 per cent of all messages will arrive in 0.25 sec, and 5 per cent will arrive in 0.5 sec. CDMA access techniques of this type, combined with "throttling" to inhibit transmissions when the threshold would be exceeded by such messages, perform in a similar manner to terrestrial systems. When a CDMA system approaches overload, more than the allowed number of simultaneous transmissions is required after a 0.5 sec minimum delay. When a CDMA system approaches overload, 0.1 sec delays are inserted to throttle demand, rather than requiring retransmission.

Private opportunities

If new technology such as Vsats can provide general across the board opportunities for data transmission in private networks it will be in the host to terminal areas. The use of Vsats for block or file transfer is not effective as all the Vsats exhibit low efficiency in this mode compared with a terrestrial line. The costs are also prohibitive in space segment in this mode compared with its terrestrial equivalent.

The guidelines for Vsat use in Australia involve the quantification of traffic flow per proposed site and an acceptable response time during peak network traffic. The choice of access technique then becomes a simple matter of matching the data net parameters to the technology limits. The satellite operating parameters are a secondary consideration once antenna size and system availablity are set. The data requirements dominate.

Vsats provide significant cost savings and functional network control in distributed data networks. Those Vsats which emulate protocols also provide significant network speed improvements as a side benefit. Growth potential at a site for traffic, particularly during the busy hour, is potentially a weak point for random access techniques which have no flow control under burst conditions. Any one who has operated a stat mux network under overload conditions can attest to this.

New technology is always a challenge. Vsats are fascinating and for data quite useful. The old cutting edge and commercial advantages which flow from capturing that advantage will sort out what applications and technologies are applicable. It is intriguing to compare the new cost structures to the existing terrestrial services and see the wide gaps exposed.

> *‘It is intriguing to compare the new cost structures with the existing terrestrial services and see the wide gaps exposed’*

Networked PCs 'top option' to IBM System/36

CAMBRIDGE, Mass — Top US companies looking for substitutes for IBM's System/36 departmental minis regard networked personal computers as a top alternative, according to a recent study. The survey, conducted by Forrester Research, questioned 35 companies which had used or evaluated the System/36 as a departmental computing system.

It found that the failure of IBM and other minicomputer vendors to "provide comprehensive PC connectivity solutions" has led users to implement PC local-area networks, according to research manager John McCarthy.

Among respondents who evaluated but did not implement a System/36, 73 per cent said the System/36 was "unworkable as a PC integrator". Among the System/36 users, 50 per cent said the System/36 was "not a perfect solution," but they would add personal computer integration as a secondary application.

"When the main application of the system is PC integration, the System/36 does not meet users' expectations," Forrester concluded.

"Simple minicomputer terminal emulation is not an integration solution for users. It should be peer-to-peer. The vendors should make it simpler for personal computers to take information out of minicomputer-based databases. You cannot get a quick extract on the departmental database and drop it into a Lotus spreadsheet," McCarthy said.

Most non-System/36 users also complained about the device's lack of personal computer support capabilities, and rated IBM's PC Support/36 software the lowest among System/36 programs.

The same group also gave a low rating to the IBM System/36 database program, Data Utilities/Query/36. Since one of the primary functions of a minicomputer as a PC integrator is to run multi-user database applications, this does not bode well for the System/36, according to the study.

Most minicomputer vendors have not implemented connectivity at the application level, which would provide access to mini-based databases. "They have not addressed questions such as, 'How do I deal with different data formats?' " McCarthy said.

Mini vendors 'slack' on links

FRAMINGHAM, Mass — Minicomputer vendors are improving connectivity options between their departmental system and personal computers by using local-area networks as a foundation, but they are not moving fast enough to satisfy users.

The claim was made in a connectivity analysis by industry consultant Andria Rossi, president of Rossi Consultants of Marblehead, Mass, who also castigated selected vendors for a "confusing" product array.

Vendors such as Hewlett-Packard and DEC pioneered the push for personal computer integration. Both companies have ported selected minicomputer applications down to personal computers as the next step in the evolution of integration.

"HP was the first to embrace the personal computer into its architecture, and many vendors have copied its methods," Rossi said. "Although HP was the first to port (office automation) applications, it has provided a confusing array of options that are just too difficult for users to sort through," Rossi said. "They also do not have an office automation image."

> *'Although HP was the first to port OA applications it has provided a confusing array of options'*

HP Deskmanager is an example of a minicomputer application ported down to HP and IBM personal computers. This program operates on minicomputer systems in conjunction with a component running in the personal computer called Advancemail.

It is integrated into HP's Advancednet Officeshare networking family, which includes the HP Thinlan coaxial-based network, the HP Starlan twisted-pair-based network and a remote asynchronous option, according to product manager Gerry Lameiro for the Colorado Networks Divison of HP.

DEC followed suit with a personal computer version of its WPS+ word processing program, and Data General ported its CEO Write word processing software down to the personal computer.

The next step in the integration evolution came with the incorporation of personal computers in distributed applications. These applications included electronic mail and file distribution. HP allowed a personal computer file to be mailed to "anyone on the whole network," according to HP's office-systems division.

With spreadsheets, which can be sent to different personal computer applications or incorporated into HP 3000 applications, the user must perform the conversion. For example, a Lotus Development Corp 1-2-3 file would have to be converted to another file to be mailed to a Visicalc program or HP 3000 application.

Beginning this year, DEC will allow personal computers to use electronic mail facilities and participate in the company's All-In-One office system through PC All-In-One. This requires personal computers to be linked to a dedicated Microvax via an Ethernet connection or asynchronous link.

DEC's Vax/VMS Services for MS-Dos programs will provide personal computers with file transfer capabilities and allow applications to be shared with Vax minicomputers.

DG has not yet followed suit. "Ultimately, we would like to distribute more functions down to the personal computer to get the benefits of a departmental minicomputer and the power of the personal computer," group manager for communications product marketing at DG, Joe Foreione said.

The next step in the personal-to-minicomputer integration evolution would be the "ability to access a program through another program and transfer files between those programs," Rossi said.

HP provides this type of task-to-task communication over a Starlan network using HP's Information Access program. The program allows personal computer users to access the HP Image database on an HP 3000 and also to retrieve, organise, format and download the data into applications such as the Lotus 1-2-3 spreadsheet program, and Ashton-Tate's dBase II and Microrim's R:Base Series 500 database management programs. The menu-driven Information Access program reportedly tells the user the estimated time to complete a job and includes a built-in report generator to off-load MIS report requirements.

DEC has also begun to implement this type of task-to-task communication. Its first attempt to provide this level of integration is its Vax Xway program. Xway allows personal computer users to exchange spreadsheet models and data between spreadsheet programs such as the Lotus 1-2-3 as well as Visicalc, Microsoft's Multiplan and DEC's DECcalc applications.

The ultimate level of integration for users, which is still just a goal, is the ability to distribute databases. "Next to OA applications, people are asking for distributed databases. It is a widespread demand," Forgione said.

127 voice-data police channels

MOBILE radio sets supplied to the NSW police force by Philips can be switched from voice to data channel and back remotely by the base station for computer database access from a terminal in the vehicle. According to the vendor, the feature is one of the facilities offered by total microprocessor control of the 450MHz FM91 units, 2000 of which were supplied to the police. The mobile, built in Clayton, Victoria, can handle up to 127 channels. It has been exported for police use to Aberdeen and London, as well as to Malaysia and China.

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TRADE ENQUIRIES WELCOME

Comms fuels Mips race

DEPARTMENTAL computing, increasingly tied in with corporate communications, will grow 43 per cent a year — more than twice as fast as mainframe or micro-computing, according to a research report.

Californian research company Input said that, measured in Mips (million of instructions per second), departmental computing now accounts for about a quarter of all corporate computing capacity.

But its use will increase sixfold to 1991, a growth rate of 43 per cent a year compared with a predicted 12 per cent annual increase for microcomputing capacity and a 19 per cent increase for dumb terminals connected to remote mainframes.

Input defines a department as an organisational entity headed by a full-time manager and composed of one or more work groups of three or more people performing inter-related tasks. Departmental systems include minicomputers, multi-user supermicros, PC-based local area networks and micro-mainframe connections in which much of the processing is performed on a micro.

Endusers demanding more power and access to corporate computing resources, and vendors capable of meeting those demands with price/performance improvements and communications advances are fuelling this growth, the report said.

Departmental software is also expected to increase, but not at the pace of departmental Mips growth, Input said. In the US, Fortune 1000 companies will increase their use of departmental software by 32 per cent over the next five years, pushing spending up to $US7000 million a year from the present $US2000 million. This compares with a predicted growth of 19 per cent a year for the overall software market.

The increased use of departmental computing hardware and software goes hand-in-hand with increased use of communications to tie the department into the corporate fabric.

In addition, departmental systems will serve as gateways to other departmental or corporate systems, due to increasing operating system sophistication.

"Departmental systems derive their strength from being able to handle the complexities involved in inter-tier exchanges while remaining close enough and responsive enough to the individual user to be an excellent central sources of computing power," the input report said.

And as more powerful interconnected nodes increase in number, the corporate host will shrink in significance to the status of an equal node on the network — it will no longer be necessary to go through the host to access other nodes.

Long-term EFT/POS solutions

Funds transfer networking contains many traps for the unwary, argues Steve Cowin. His article, written *before* his company learned it had missed out on the Tran$end tender, nevertheless contains scores of valid management considerations.

ONE thing can be stated with certainty in the debate about electronic funds transfer and point-of-sale terminals: there is no standard type of EFT/POS network. The motives and requirements of such a network vary, as do the motives and goals of the organisations which implement them. The requirements of the network equipment reflect the requirements of the network and therefore vary.

The following organisations are now developing and commissioning EFT/POS networks:

☐ Telecom.
☐ Private commercial network operators.
☐ Consortium network operators providing services to consortium members.
☐ Banks.
☐ Non-bank financial institutions including credit card issuers and retailers.

While each network operator has some characteristics common to all operators at the type, there are still deep divisions even between operators of the same type.

The most significant factors contributing to an operator's network philosophy seem to be policy, strategic direction and size.

Before one can start to construct a long-term network solution for EFT/POS, a thorough analysis of these factors as they related to the network operator and to EFT/POS customers needs to be undertaken. Several attempts at EFT/POS networks in various places worldwide have failed since these factors were not adequately explored. These networks failed commercially, despite the fact that technically they fulfilled their specifications. It is not enough that a product works; it must be right for the organisation.

Network size

Returning to considerations of policy, strategy and size, let me highlight some of the more significant aspects of these factors which determine network design and concentrator design.

Network size is the factor most readily seen to influence concentrator design. In order to minimise individual terminal communication line costs (the largest single network cost factor), it is preferable to place a concentrator in the same telephone exchange area as the retailer. This may call for:

- many very small concentrators
- a few large concentrators
- many large concentrators, or indeed,
- concentrators of variable sizes.

The per-terminal cost of the concentrator will vary upwards either side of some optimum design size for the concentrator. Analyses of various networks have produced optimum sizes ranging from four to about 40 ports.

Network size influences design also in the area of traffic. The network can be cost-justified only above a minimum traffic level. If the traffic volume is low, dialup, switched virtual circuit or multi-drop techniques may be used as appropriate to reduce communications costs. If network traffic is expected to be very high, provision needs to be made to prevent congestion in concentrators and to support higher-speed links to reduce transit delay.

As the network grows above about 100 concentrators, requirements on the complexity and sophistication of network management begin to vary considerably. It may be quite feasible to maintain a 100-concentrator network by direct operator control, and Prom swaps as firmware is revised.

A larger network would require automated performance reporting, automated re-configuration, and the facility to download software via the network.

Particularly relevant for larger networks is the transmission network which carries traffic between the concentrators and the financial hosts. As for the concentrators themselves, for smaller networks, this backbone network and its management can be simple.

As the network becomes larger the nature of it takes on aspects of policy and strategic relevance.

Policy aspects include business policy and technical policy, both closely interrelated. The business policy issues stem in part from the business relationship which exists between the network operator and the financial institutions; and between the network operator and the retailers. Such issues have led in Australia to the distinction between the "open network" and "gateway" approaches to financial network architecture.

The principal distinction between the two approaches is the initial destination of the transaction. The "open network" requires that a transaction be forwarded from the POS terminal to the card issuer; whereas the "gateway" network requires that it be forwarded initially to the retailer's bank. The preference in approach depends on where you stand as far as the commerical relationship between the various parties is concerned.

The impact on network equipment of the choice between these two alternatives is quite significant. While an X.25 network could support both types, the addressing and security issues are very much more complex for the "open network" approach. The impact is predominantly in the concentrators and POS terminals.

On the other hand it is difficult to conceive an open network approach which could utilise an SNA network. Commercial policy issues ultimately affect the technology of the network.

Other commerical and technical policy issues which impact network design include:

Who is to maintain and own POS terminals?
Who is to be responsible for the training of retailers' staff?
Who is to resolve retailers technical problems?
Who is to resolve retailers' financial problems, such as disputed transactions?
Who is to be responsible for fraud?
Who is to be responsible for key management and encryption?
What availability is to be guaranteed to retailers?
What confidence is a retailer to have that a transaction will be completed?
What range of different cards is the retailer to accept?
Does the network operator wish to enhance the profitability of any particular financial institution?
How is the network to be tariffed, and who pays?
What competition is there and what are they doing?
Where are the concentrators to be installed and what environmental conditions apply?
What protocols are to be adopted?
What maintenance organisation is to be used, and what skills do they need?
What is the network cost target (capital/ongoing)?
What sources of supply exist for the required equipment?
Are there multiple sources of compatible equipment?
What support can be relied upon from the supplier?

The ways these issues or questions affect network and concentrator design are complex and varied.

Checklist EFT/POS Network

1. Project a long-term strategy.
2. Adopt an approach with a migration path:
   Features
   Size
   Compatibility.
3. Resolve application layer considerations:
   Message format
   Message content
   Security and authentication
   Key management
   Financial network architecture.
4. Cater for overall network considerations:
   Terminal management
   Network architecture and technology
   FEP implementation
   Traffic considerations — throughput
   Response time
   Network size
   Protocols
5. Keep in mind the marketing considerations:
   Relative performance
   Inter-bank differentiation
   Cost/performance ratio
   Presentation of service to retailer
   Range of user facilities
   Choice of terminal implementation
   Target retailer
   Competition.

● *Steve Cowin is a senior consultant with J N Almgren Pty Ltd. He specialises in the application of X.25 packet-switching networks and has acted as a technical advisor to some of Australia's leading banks in the development of pilot EFT/POS networks. He is also a member of the Standards Association of Australia committee developing EFT/POS standards.*

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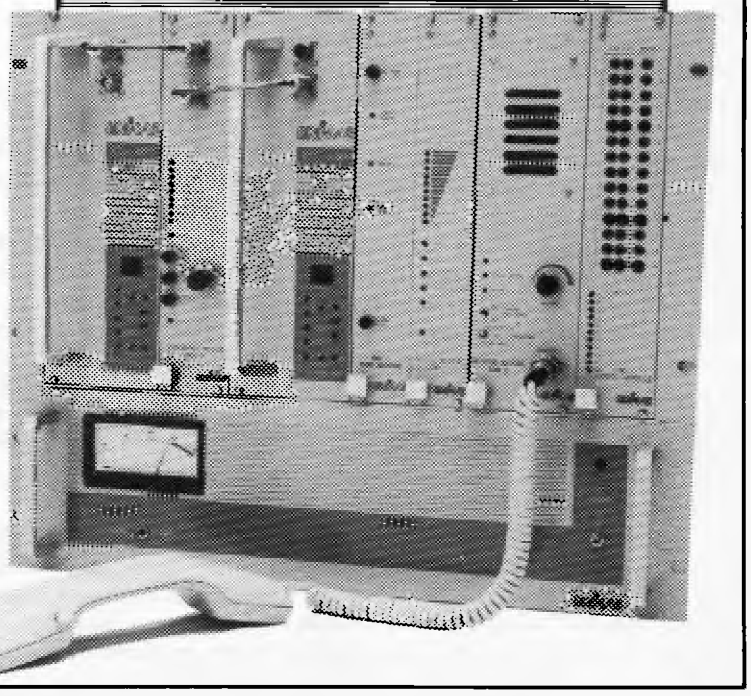

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There's still a lot of work to be done on Lans, says Tony Lee

Hedge your bets with 'cheapernet'

FOR MORE than a decade the communications industry has been promoting, marketing and selling orthodox Lan technology — such as Ethernet/IEEE 802.3, Token Bus/IEEE 802.4 and Token Ring/IEEE 802.5. Since the International Standards Association (ISO) put forward its seven layer reference model for Open Systems Interconnection (OSI) some five years ago, much work has gone into standardising layers one to seven: Physical Layer through to Application Layer.

Some standards have been proposed and approved, such as the Physical and Data Link Layers (IEEE 802.3, 802.4, 802.5). However, there is still much work to be done in standardising such layers as Session, Presentation and Application. In fact, so dynamic is the OSI reference model that, as conditions and technologies change, so must the various standards. Already committees such as IEEE 802 are reviewing the Physical and Data Link Layers for adding new services, such as broadband Ethernet.

In an industry that is so volatile, one cannot but wonder if an investment in an orthodox Lan technology will be economically viable. Typical orthodox Lan technologies involve expensive cabling, cable hardware and terminal interfacing hardware. Generally, per port costs for Lans such as Ethernet and Token Passing Bus and Ring can range from $A700 to as much as $A1500.

The benefit of the orthodox Lan is in CPU-to-CPU communications, where high bandwidth is necessary for large data file transfers.

But often the user is much safer hedging his bets and opting for a much cheaper, less orthodox Lan solution, particularly for terminal and PC networking. Typically, these Lans run on cheap wiring — such as twisted pair or RG62 coaxial cable — require only cheap hardware, and normally use proprietary access mechanisms with gateways to standard networks such as X.25 and Ethernet.

Among such solutions offered by vendors are Datacraft's three "Cheapernet" alternatives to orthodox Local Area Networking, each claimed to offer lower interacting costs, multivendor support, high performance and reliability with networking flexibility. The three products are:

- Micom Instanet 6000 Series Data PABX
- Datacraft 7300 Distributed Data Switch
- Digital Products Net Commander/Easy Lan.

The Micom Instant 6000 Series is a high performance data PABX offering efficient CPU port utilisation using contenting with queuing and CPU port selection, with alternate routing for multiple CPU's. Multivendor support with local area networks running at up to 1.544M-bit/sec is available for less than $A400 per port connection. As many as 2016 channels can be supported, with up to 1008 simultaneous connects at 9600 bit/sec. Standard support is available for popular CPU vendors such as Prime, DEC, HP and DG. Support for VDUs, printers and PCs is via standard interfaces such as RS232/V.24, RS422 and current loop.

Local area distribution for up to 128 channels over twisted pair wiring is available using the M480 series of integral and stand-alone time division multiplexers. Small clusters can be supported by the M470 series of TDM. The M800/21 and Micom Box Type 2 Series of statistical multiplexers can be used for networking branch offices, which may be intrastate, interstate or even international.

Access to Telecom's X.25 packet switching network, Austpac, is possible through the integral MS50/X251 Pad, which can support up to 16 channels. If access to IBM environments is desired, the M74001 integral protocol converter is available, with bisync or SDLC/SNA support for up to 16 channels.

Micom recently announced support for direct bus attachment to DEC PDP11 and Vax Series CPU's via its Instabus product using a Unibus connection. The Instabus replaces up to 15 DMF32 cards normally installed in the DEC CPU. This means support for up to 120 channels over twisted pair wire operating at 1.544M-bit/sec. Connection to the Instant 6000 Series is via an integrated card set. Inerconnect software is available for installations requiring multiple Instanet 6000 Series PABXs (See Figure 1).

> *With the proliferation of low-cost PCs, there is an urgent need for low-cost PC networking*

Alternatively, for those applications requiring all the functionality of a data PABX but where the local geographical dispersion of terminals and computing resources dictates the use of a cable-based technology, the Datacraft 7300DDS (Distributed Data Switch) would be suitable. The 7300DDS offers such features as port contention, port selection, dual sessions, speed, code and flow control conversion and 19.2k-bit/sec data rates for a very economical less than $A500 per port connection, including cable costs.

The 7300DDS multiplexing technique uses a proprietary access technique called Adaptive Time Division Multiplexing, a combination of CSMA/CD and Token

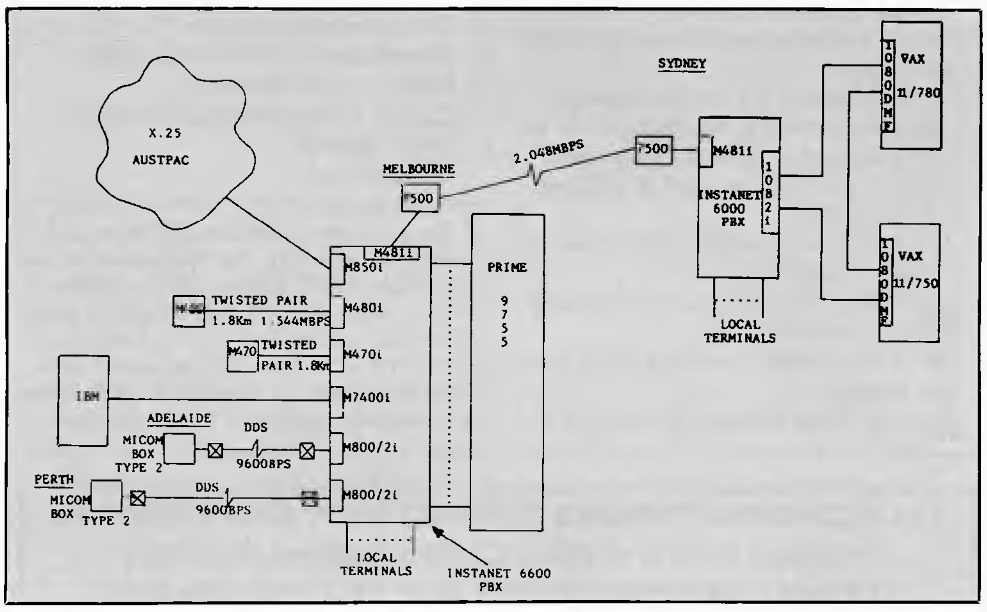

Fig 1: Instanet 6000 networking.

Tims isn't just a trivial pursuit

By Steve O'Pray

There's a long, hard road to a good phone management system

COMMUNICATIONS is a resource to be managed and a cost to be controlled — this nice piece of rhetoric is often used by vendors and communications managers promoting the installation of a telephone information management system (Tims) of. But the path leading to successful implementation can sometimes be more tortuous and complex than any of the original players thought possible.

The installation of Tims can be considered in two distinct phases. First, the phase in which a system is selected and configured to cope with your PABX, network and organisation structure. Second, the application phase, where the people issues come into play and reports are finally produced, distributed and utilised.

Setting up a Tims system, with the possible exception of small individual sites, is most definitely not a simple "load and go" exercise. While generalising across a large range of PABXs and Tims systems is somewhat perilous, the following points may be useful to consider in new installations (some may appear self evident, but nonetheless they recur with monotonous regularity):

- Establish and agree on realistic objectives with management. Ensure your focus is on the company's business needs. Your preferences may need to take a back seat initially.
- Do not cut corners in dimensioning your system. Use generous safety margins in estimates for capacity calculations — the marginal cost of following this philosophy is generally not high. You will be capturing large amounts of data, and later changes in project direction may leave you embarrassed, for instance if a decision is subsequently made to include incoming call data.
- Know your network in detail. Unless Tims is tightly specified and monitored during installation you may be surprised at the way some aspects of your network have been implemented. For example, pauses and digit insertion may be used that your Tims cannot interpret. If you operate a transit switched network, consider carefully how you intend to cost calls, and determine routing over two or more routes and alternatives.
- Check that your solution is robust. What happens during a hardware failure or data link outage? Is data lost? How much? Does it matter?
- Estimate realistically the amount of care and feeding your system will need. Constant updates will be required to handle the average load of moves and changes in the system, more so if the database also provides your electronic and/or paper directory. Be aware of the end-of-period processing requirements. Obtain benchmarks if possible.

Having run the gauntlet of implementing the system the communications manager can be dismayed at the underwhelming response Tims reports receive. In the application phase, attention to the people issues and the ongoing selling of Tims to management and staff is critical if the system is to be accepted and actively used.

The critical time for staff acceptance is the initial introduction. Often users fear a "Big Brother" approach from management. Staff should be fully advised of system objectives. If the role of the system is for internal cost allocation and traffic measurement, say so! If the system is to be used to police possible abuse of telephone facilities, a clear and unambiguous statement of policy and consequences for non-compliance should be circulated, preferably well before introduction. This policy statement should be repeated regularly to remind staff and inform new starters.

Obviously Tims has the potential to be an industrial relations issue if introduced with little or no consultation. To date, NSW Privacy Committee guidelines have provided the ground rules for installations and have the general agreement of union organisations. Information about these guidelines can be obtained from the Aus-

(Continued page 14)

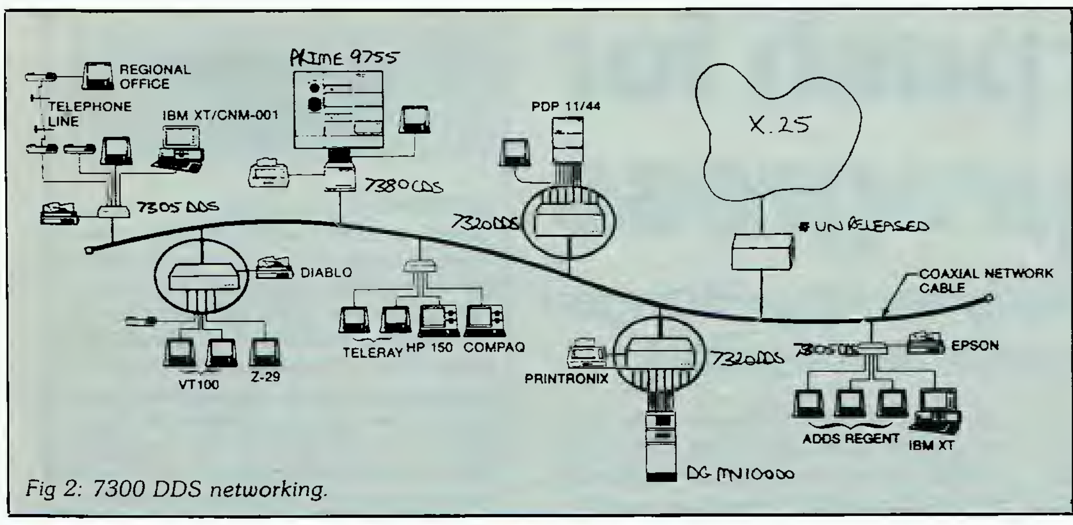

Fig 2: 7300 DDS networking.

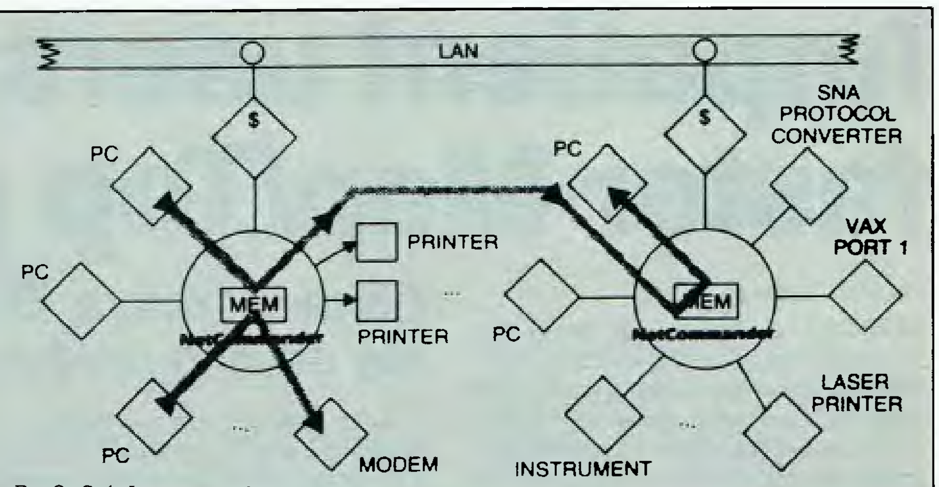

Fig 3: Sub-Lan networking.

Passing. The transmission medium is RG62 coaxial cable operating at 2M-bit/sec for distances of up to 1.5km. Distributed intelligence results in greater network reliability, since there is no master device controlling the entire network. Centronics/Data Products parallel port compatibility gives the product an edge over many competing products.

Typical applications for the 7300DDS include printers and plotter/sharing, PC networking, multiple host selection, and centralised data switching. Network expansion is easily implemented by adding channel cards into the 7320 and 7380 models, or by adding new DDS equipment on to the cable. This means lower start-up and expansion costs (see Figure 2).

With the proliferation of low-cost PCs, there is an urgent need for low-cost PC networking. Recent statistics have shown that 65 per cent of PCs reside in clusters of between 2 and 10. Likely organisations to have such clusters are legal firms, government agencies and educational institutions.

PC users have three basic requirements:

☐ Peripheral sharing, such as lasers, plotters, modems.

☐ Peer-to-peer file transfers.

☐ Data and software sharing.

Four out of five users require peripheral sharing, 15 per cent require peer-to-peer file transfer with the remaining five per cent requiring data and software sharing, according to research figures. The need for low-cost PC networking is met by the Digital Products Net Commander/Easy Lan products. This approach to networking has been termed "sub-Lan".

The sub-Lan solution combines a 4, 8, 16, 30-channel Net Commander intelligent asynchronous data exchange with Easy-Lan PC/MS-Dos software. This easy-to-instal, easy-to-use combination of two powerful networking tools provides PC users with a full range of file transfer and peripheral sharing capabilities at a fraction of the cost of a baseband or broadband Lan. The PC is free to go on to other tasks while these operations are performed in the background. Any PC can talk to any other without the need for servers, and remotely connected PCs are supported.

Gateways to other networking environments, such X.25, SNA, Ethernet and larger data PABX's are easily achievable. Future support for IBM's Token Ring/IEEE 802.5 network on Digital Products sub-Lan will also be forthcoming. (See Figure 3)

- *Tony Lee is a senior systems engineer and product analyst for Datacraft.*

e O'Pray is principal of consultants O'Pray Communications Pty Ltd.

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Impatient users push for faster Map/Top progress

General Motors, Boeing and the Pentagon are offering conformance test facilities

By Bob Wallace

SEEKING greater market recognition, America's Map/Top Users Group has enlisted the aid of the Corporation for Open Systems (COS) and several large users in an expanded testing program designed to speed the introduction of products compatible with Manufacturing Automation Protocol/Technical and Office Protocol.

The Map/Top Users Group is expected to announce that it has joined forces with COS to develop a Map/Top conformance test for the yet-to-be-released Map Version 3.0 specification. *Network World* has also learned that the US Air Force, Aluminium learned that the US Air Force, Aluminium Co of America, Boeing Computer Services Co, Deere & Co, General Motors Corp and TRW Inc are to volunteer their facilities for use in Map/Top product conformance testing. British Aerospace and the UK Department of Trade and Industry are to host the same conformance testing activities in the UK. The announcements were seen as a boost to what many believe had been a stalled Map movement.

The enlistment of the eight new firms will bring to 10 the number of Map/Top conformance testing centres in the US and abroad, and reduce delays vendors now encounter in certifying product conformance to the Map/Top specification. Currently only the Industrial Technology Institute (ITI) — an US based network testing company — and the Fraunhoffer Institute, in Karlsruhe, West Germany, serve as conformance testing centres.

In a related announcement, the Map/Top Users Group and ITI are expected to announce at the meeting the availability of software that will enable vendors to test their products for Map 2.1 compatibility. The $US20,000 package will include a site licence for the conformance test software, as well as a Sun Microsystems Sun 3 workstation. Numerous networking vendors, including Digital Equipment Corp, IBM, Industrial Networking Concord Communications and Honeywell already offer network hardware and software compatible with Map Version 2.1.

Map is a suite of emerging and established standards designed to allow automated factory floor equipment produced by a variety of vendors to communicate over broadband communications networks. Top is designed to provide the same capabilities over Ethernet-like local networks in technical and office environments. The expansion of the conformance testing program is expected initially to benefit the Map movement more than Top, because the factory specification is more fully developed than its office counterpart.

COS will assist the Map/Top Users Group in the development of a conformance test against which purported Map 3.0-compliant products will be tested. The Vienna, Virginia-based COS boasts 62 member companies, of which roughly 25 per cent are users. COS was chartered in early 1986 to accelerate the introduction of interoperable, multivendor products and services based on international standards.

The announcement of the testing alignment follows the recent decision to postpone a demonstration of Version 3.0 of Map/Top, originally slated for the November Autofact '87 conference in Detroit. One reason given for the delay was COS' inability to complete product conformance tests.

Although some 50 vendors were to take part in the event, networking heavyweights DEC, IBM and Hewlett-Packard Co had not committed themselves to the demonstration when the delay was announced. GM spokesman Mark Cocroft said the massive Map/Top demonstration, supposed to be twice the size of the Autofact '86 demonstration, would be held in Baltimore in the summer of 1988. GM and COS hail the creation of the testing arrangement as the last major hurdle before completion of Map development.

Products incorporating Map Version 3.0 that have been conformance-tested will be available in the not-too-distant future, Gardner predicted. "The completion of the Map/Top 3.0 test platform will permit Map and Top compatible products to be widely available in the 1988 to 1989 time frame."

Japan in quest for industry standard

CW International News Service

TOKYO — Japan will launch a three-year government/industrial program in April in search of a standard Japanese version of General Motors' Manufacturing Automation Protocol (Map).

A preliminary plan said an extensive survey will be conducted in the first year of the project on Map-related activities at foreign organisations, including the International Standards Organisation (ISO), and companies in the US-based Map/Top Users' Group.

Map is composed of a suite of proposed and established standards designed to allow communications among factory automation equipment from a number of manufacturers.

A basic element of the eventual protocol, called the Factory-Automation Interoperable System (Fais), is due to be completed by the end of 1988, according to officials at the Ministry of International Trade and Industry (Miti), which will spearhead the planned project.

Miti reportedly will assign the Fais system to the International Robot/FA Technical Centre, the Japanese office of the Map/Top Users Group. Industry experts and universities also will be solicited to join the project.

An increasing number of Japanese manufacturers have indicated an interest in adopting the GM-promoted factory floor automation architecture, with automobile parts vendors leading the pack.

Some Japanese Map-oriented manufacturers, however, are beginning to question Map's connectivity with machine tools and robots. Also, Japanese manufacturers with baseband local area network systems reportedly are concerned about a switch to Map's broadband architecture.

Overseas Outlook

GENERAL Motors is putting its money where its EDI (electronic data interchange) mouth is: the car manufacturing giant is providing electronic payment facilities for eight of its divisions through eight major US banks. GM, whose Electronic Data Systems subsidiary built the prototype system on a personal computer last year for use on an IBM mainframe, aims to become the first US company to make electronic payments to all regular suppliers. Its eight divisions now online to banks cater for about 300 of GM's total of 20,000 suppliers in the first phase of the project.

• • •

ITT CORP and the French Compagnie Generale d'Electricite (CGE) have signed an agreement combining the telecommunications equipment manufacturing operations of the two companies, creating the world's second biggest telecomms player after AT&T. The Dutch-registered venture is 63 per cent owned by CGE and minority partners, and 37 per cent by ITT, which stands to receive $US1250 million in cash plus its share in a new entity valued at $US1600 million. The joint company operates in 75 countries, employs 164,000 people and had 1986 sales of $US12,500 million, with total assets of $US9000 million.

• • •

JAPAN's NTT has launched a three-year effort to develop an operating system that will merge data processing and switching capabilties. Reportedly based on Tron (The Realtime Operating System Nucleus), the multi-language processing architecture developed at Tokyo University, NTT's effort will initially concentrate on building a standardised interface for host, terminal and communications equipment to be connected to the carrier's planned Integrated Services Digital Network (ISDN). The Japanese reportedly will seek to have the interface made part of an international ISDN, pitting it against the Portable Operating System Interface and Microprocessor Operating Systems Interface proposals being developed in the US by the Institute of Electrical and Electronics Engineers.

• • •

THE market for tried-and-true IBM 3270 terminals is eroding towards growth rates of a mere 2 per cent a year as sales of mainframes dip, alternative products such as microcomputer mainframe links capture markets and users move to more distributed processing networks, according to an IDC study. Chief reason for the drop from the 26 per cent growth rates experienced in the past five years is the growing use of PCs to access mainframe applications.

Installing Tims isn't a trivial pursuit

(Continued from page 12)

tralian Telecommunications Users Group (Atug).

Once reports are being produced you may find that middle management will say "OK, that is my phone bill, so what? The phone is an integral part of doing business, now I know the numbers, but what do I do with them?" In some cases they will be right — Tims will be of little or no use.

There will be many instances, however, where the information can be used to advantage. Tims reports should be promoted as a management tool. Guidelines should be provided on how to use and interpret the reports. Looking at call patterns as well as costs can highlight business problems that are being reflected in phone usage. Long or frequent calls to business units that have previously operated autonomously may be a signal of other problems.

Tims may also highlight the need for other facilities, such as voice mail and additional speed dialling, or a review of tie-line requirements.

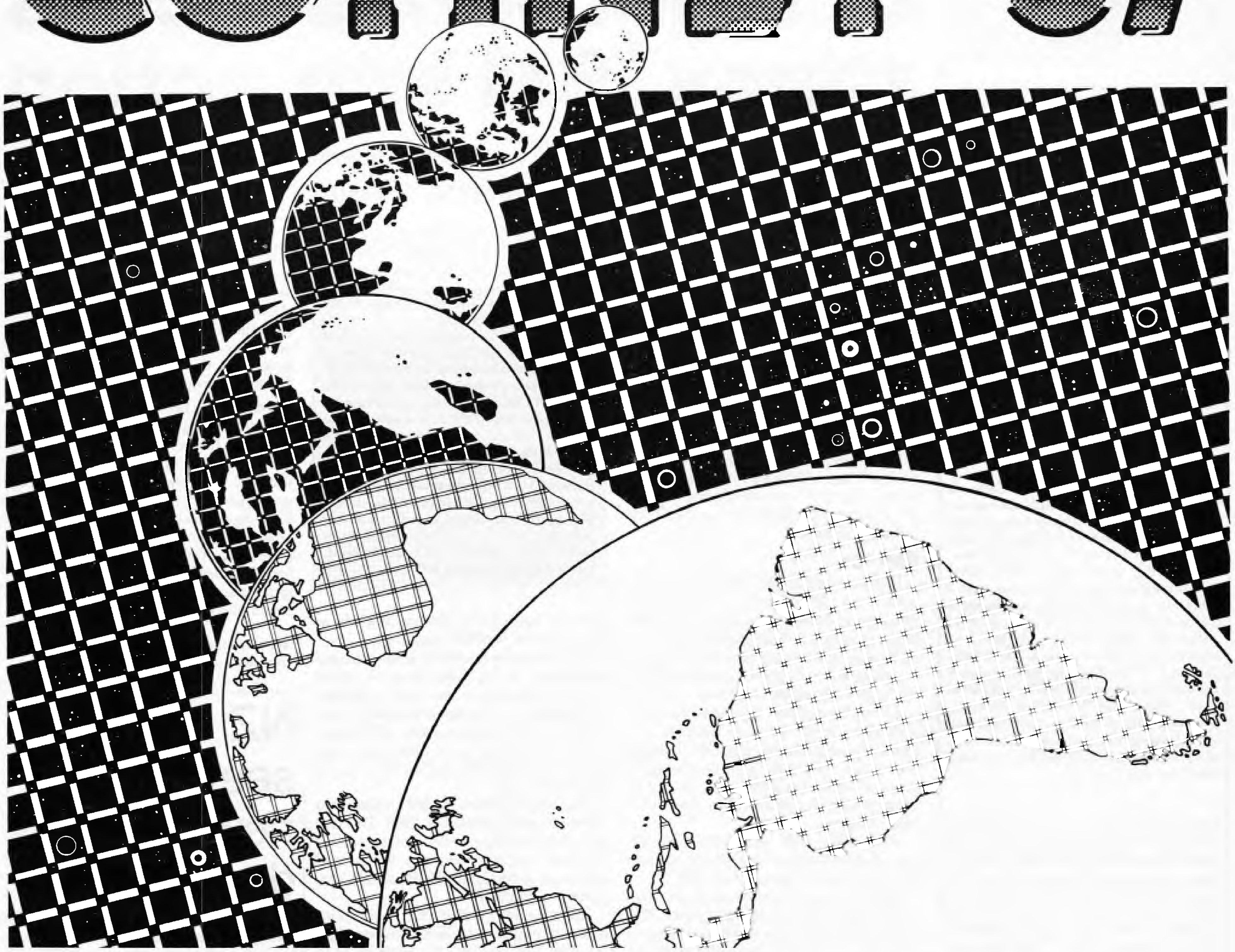
Watch these points in the application phase:

- ☐ Keep it simple. Critically examine the need for any "bells or whistles" in your initial system.
- ☐ Do not create a paper avalanche. Use any exception-reporting facilities available to show aggregates and major contributors.
- ☐ Do not expect to reconcile your Telecom account with Tims reports with any accuracy. Until billing periods can be aligned and detail provided on accounts, this is not a fruitful endeavor. The discovery of non-metering exchange lines can present an interesting moral dilemma, however.
- ☐ Ensure that backup and archiving is carried out. Some interesting enquiries surface once people know that call data is available: "Can you find out if we sent this confidential fax to the opposition by mistake last Friday, please?"
- ☐ If it is within your charter and ability, offer help in analysing the reports and other information to optimise telephone facilities for user departments. (Statistics obtained via the Customer Administration Terminal of some PABXs are a useful aid.)
- ☐ Do not view costs in isolation. Look at the business context. No one cares if the sales department bill went up 20 per cent when it increased sales 50 per cent.
- ☐ Finally, use the system yourself to produce high-level reports showing trends in usage and costs, or to justify existing or proposed facilities such as tie-lines.

After some notable failures and project delays, this specialised niche in the market is now being serviced by a small group of vendors delivering viable products which they continue to develop and improve. Organisations with significant communications budgets have recognised Tims as a legitimate tool to monitor, allocate, and to some extent control costs. A useful and manageable system is achievable, but do not let anyone tell you it is a trivial pursuit.

● *Steve O'Pray is principal of consultants O'Pray Communications Pty Ltd.*

COMNET '87



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Details from Stephen Moore, manager, CW Expo, or Karen Rickwood, executive assistant, tel: (02) 439 5133, fx: (02) 439 5122, tlx: AA 74752

Industry Insight

CONTINUING rapid growth led Distributed Data Processing to move to larger premises in South Melbourne just before Christmas. The company, a specialist systems programming consultant and software supplier, is now at 2nd Floor, Hanover House, 158 City Rd, South Melbourne.

• • •

HEWLETT-PACKARD and 20 other computer makers, including NEC and Toshiba, have joined the growing list of manufacturers supporting Sun Microsystem's Network File System (NFS) local area network protocol on their systems. According to Sun Computer Australia, this brings total NFS licensees to 40 vendors and 20 universities and demonstrates industry backing for a much-needed de facto standard.

• • •

STANDARD TELEPHONES & Cables is to deliver up to 20,000 Australian-made smart telephones to Papua New Guinea over two years under a $A500,000 order won against international competition. The model selected by the PNG government-run Post & Telecommunication Corp is made in Sydney and features a nine-number memory and last number redial. STC export manager, Gerald York, who had to rush an advance 3000-plus delivery to PNG before Christmas, believes the order has given STC a foot in the door of the PNG market because of the country's desire to standardise. "We could well be supplying Papua New Guinea with Australian-made telephones for a very long time," he said.

• • •

ERICSSON Radio System, a Swedish subsidiary of L M Ericsson, is to set up a service centre in Beijing under an agreement with Chinese company Jing An to look after $A150 million of advanced radio communications systems it is selling to China. Several Chinese authorities have ordered Ericsson's new TC 549 radio exchanges, base stations and mobile and portable telephone units. Several of the systems ordered include mobile switching and encryption facilities, according to the company.

• • •

USE OF an international communications network allows representatives of Sydney software company Computations to demonstrate systems such as the Cloas life office administration package in prospective clients' offices around the world. Computations is also considering providing commercial communication services, according to associate director Trevor Peak. The company uses dialup or leased line access to CSA's worldwide Infonet as well as the dedicated network operated by Jecha Pty Ltd, a joint venture between Computations and the Government Insurance Office (GIO) of NSW. Jecha is connected by direct line to Computations' UK subsidiary at Reigate, Surrey, and the company plans to link up with its new US office at Atlanta, Georgia.

• • •

TELECOM last month installed the first of a number of Summit matrix switches in Melbourne to monitor local and remote data lines. The Suns (Summit Universal Network Switch) units, supplied under a $A1.5 million contract, are intended to automatically switch traffic to other lines of the network in case of faults on any of the lines monitored. According to Summit, the company has now placed its network switches with three of the five most significant networks in Australia. Qantas and the Commonwealth Bank were earlier customers.

DEC network success stings IBM into action

Paula Musich reviews the local network innovations, winners and losers of 1986

FRAMINGHAM, Mass — Although many events and players had a hand in shaping the local networking industry in 1986, computer heavyweights led the parade. First in the march was Digital Equipment Corp's (DEC), singing "DEC has it now" IBM followed with "It will ship next year".

DEC's net income in 1986 increased 38 per cent over 1985, a showing largely attributable to the company's networking strategy and its decision to sell aggressively into IBM's installed base.

Although IBM began shipping its Token-Ring network last year, the company has struggled to present a cohesive network strategy and has been beset by poor financial results.

"This was the year for DEC networking, and next year will be a continuation of the same," said DEC-watcher Sonny Monosson, publisher of "Monosson on DEC", an industry newsletter.

Barrage

During the year, DEC fuelled the wiring wars with DEConnect, its own cable management scheme, and let loose a barrage of products including DECnet Dos, the DECserver 200 terminal server and support for the new Dos-based Vaxmate on DECnet with VMS Services for Dos.

The company also migrated the high-speed Vaxcluster down to Ethernet and the work group. And finally, DEC brought out seven standard network packages, three network service programs and a personal computer version of its All-in-One office system.

Meanwhile, IBM announced an unprecedented number of products but could not ship most of them before 1987.

IBM's announcements were dominated by the long-awaited Token-Ring links. IBM introduced support on the Token-Ring for the System/36, the RT Personal Computer, the System/370 line of mainframes, the 3174 cluster controller, the 3270 Personal Computer, the 3270 Personal Computer AT and its new 9370 superminicomputers.

In another move, IBM announced a number of programs aimed at improving connectivity between its different classes of processors. It was rumored at one point that IBM would introduce new products every two weeks for the second half of the year.

Although IBM began delivering its Token-Ring links for personal computers, users have not rushed to instal the networks as many market watchers expected.

PARIS — Development of Open Systems Interconnect (OSI) applications may soon receive a major boost with the definition of a common transactional bridge to OSI and IBM environments.

Members of the International Standard Organisation (ISO) agreed late in January on the specifications for an OSI transactional processing interface compatible with IBM's Advanced Program to Program Communication (APPC) interface. The interface opens up access to IBM's proprietary LU6.2 architecture.

A final draft document, which will be submitted to national standards groups, is to be readied by the middle of this month. The move is expected to help computer manufacturers by providing a much needed impetus to develop OSI applications, which have been sorely lacking.

The reason for the slower-than-expected acceptance of the Token-Ring can probably be attributed to the long evaluation process users go through with new technology. Just as the market evaluated Ethernet before embracing it, so will users test-drive the Token-Ring before they buy in large quantities.

Two other noteworthy IBM networking products were unveiled in 1986. This was the year that IBM gave up its stand against Ethernet and backhandedly announced Ethernet support for the RT Personal Computer and the 9370.

IBM also, for the first time, made hostless communications possible between System/36 and System/38 Systems in a Systems Network Architecture (SNA) environment through its Advanced Peer-to-Peer Networking (APPN) facility.

In the standard arena, 1986 was a good year for DEC and a wait-until-next year for IBM. During the year, DEC bolstered its commitment to International Standards Organisation (ISO) networking protocols through an X.400 electronic mail interface, session-level ISO-compatible software and enhancements to its Vax OSI Transport Service software.

IBM, in its bid to introduce LU6.2 transaction processing protocols into the ISO's standards-making process, suffered defeat at the hands of a European Computer Manufacturers Association technical subcommittee. IBM will get another chance this year, however, with its source routing scheme in the Institute of Electrical and Electronics Engineers. (IEEE)

Other noteworthy events for 1986 in the local networking arena included: the formation of the Corporation for Open Systems; the cancellation of Sytek's contract for the IBM PC Network, which seems to have gone the way of the PC Cluster; the 3Com Convergent Technologies nonmerger; the re-awakening of Micom-Interlan; the emergence of Transmission Control Protocol/Internet Protocol networking protocols and the availability of multi-user personal computer applications.

- *Paula Musich writes for* Network World, *our US sister publication.*

Csironet and Techway attack global markets

CANBERRA — Techway Ltd has joined forces with a newly aggressive Csironet to market Australian communications products internationally through a jointly owned company, Network Automation Pty Ltd.

At first the new company, 60 per cent owned by Techway and 40 per cent by Csironet, will base its operations on the Ultranode, a hardware and software package developed in 1983 for use in the Csironet network.

About 200 of the nodes are now installed on the network, and they also form the basis of the $A2 million communications component Csironet is supplying for the South Australian Justice Information System (See *Communications World,* Nov 1986).

Network Automation has already forged an Ultranode distribution agreement covering Hong Kong and China.

The hardware, initially called the Micronode, was built on Motorola's MC68000 chip by Csironet and Network Research (known as Office Automation until its acquisition by Techway in April, 1986). Software was developed by Csironet staff.

The hardware will be manufactured by Network Research, while Network Automation will further develop the software. The new company's charter includes R&D in networking technology systems.

It is based in North Sydney with an initial staff of 20 under the control of Richard Duval. Some Csironet staff have transferred to the company.

NZ company seeking new Gateway dealers

A YOUNG New Zealand company has swung into Australia determined to make its mark on the networking market through products from US company Gateway Communications Inc.

Headed by Calvin Rowley, Micro Networks Pty Ltd is a subsidiary of the NZ company with the same name, which in turn is a member of the investment advisory services company Tricorp International Group.

The parent company was formed in NZ in 1982 and has grown to 23 staff on the strength of its strong dealer network and the Gateway products. Its NZ customers include Countrywide Building Society, Broadbank and the Christchurch Polytechnic.

The company intends to follow its established formula in Australia, Rowley said, but will be making a positive attempt not to cross swords with the existing Gateway distributor, Data Peripherals, which was recently acquired by Datamatic Holdings Pty Ltd.

"Gateway is keen to see us develop new markets," he explained. "We are now looking for dealers so we can establish a strong dealer base. We will provide the technical support and backup for the dealers, and will train them so that they are able to address the new markets we have targeted."

Rowley set up the company's first Australian office in Sydney three months ago. A Melbourne branch office has also been established, and Rowley said he expected Micro Networks to have a staff of about 10 by the end of this month.

The Gateway products include PC local area networks (Lans) and Lan-to-Lan bridges, plus gateways to the Lans from wide area networks and mainframes.

Codex enters troubled X.25 switching arena

By Elisabeth Horwitt

CODEX Corp has made its debut in the X.25 packet-switching equipment arena, at the start of what may be troubled times for the industry. The Codex 6510 IXP, an X.25 network concentrator with some switching and packetising capabilities, is the first of a projected series of intelligent network processors targeting the X.25 market.

By concentrating incoming X.25 data streams from multiple terminals into one line, the concentrator makes for economising, reducing port requirements by funnelling multiple data streams into one host port.

It can also help save on the cost of linking up with a commercial packet-switching network service by concentrating transmissions from multiple workstations or sites before sending them on to the nearest access node of the service.

Potential markets for the product include brokerage houses, financial firms and retail operations that need to collect information from point-of-sale and credit validation terminals.

The 6510 IXP can also act as a low-end switch, routing X.25 transmissions among a "limited number of nodes, say 10," according to the company. For larger networks, the concentrator can be linked up to a more powerful statistical multiplexer from Codex.

The 6510 IXP supports Codex's proprietary Muxport protocol so that it can accept asynchronous transmissions from a Codex statistical multiplexer, add X.25 routing and handling information, and send the packets over an X.25 network.

Codex decided to break into the X.25 arena with a concentrator because that is now the fastest-growing segment of the X.25 market, with an estimated 32 per cent annual growth in the next five years, said Lee Sudan, Codex's director of wide-area network marketing. "Today, with X.25 interfaces on hosts from nearly every major computer vendor, there is a growing demand for X.25 products that function as network concentrators," he added.

A more pessimistic view of the X.25 market was presented by Paul Bell, president of a New York consultancy. This year is going to be brutal for the X.25 equipment industry, said Bell, who has consulted on several businesses' packet-switching network projects.

"A lot of small companies will fail, while large companies will either get out of the market or turn their packet assembler-disassembler operations into cash cows and cancel their product development plans," he said. "What's killing packet switching is the fact that everyone is waiting for Integrated Services Digital Network to arrive. That will make packet-switching unnecessary, since it is an integral part of ISDN."

But Ken Bosomworth, president of the US research company International Resource Development, sees the X.25 service and equipment industry as in flux rather than in deep trouble.

"On the positive side, IBM is rapidly making it simpler and cheaper for Systems Network Architecture communications to take place over public and private packet networks," Bosomworth said. "On the negative side, AT&T is developing technologies that will increase the transmission capacity of optical fibre by a factor of 100.

"The whole purpose of packet switching is to squeeze more stuff on to the same cable. If long-distance capacity becomes dirt cheap, the whole point vanishes."

- *Elisabeth Horwitt writes for* Network World, *our US sister publication.*

High-speed modems

The Codex 2250/2260 modem.

A SERIES of Codex high speed modems that are V.32 compliant has been released in Australia by JN Almgren Pty Ltd.

The Codex 2250/2260 modems are intended for full duplex operation over two wire or leased lines. A spokesman said the modems were capable of asynchronous or synchronous use.

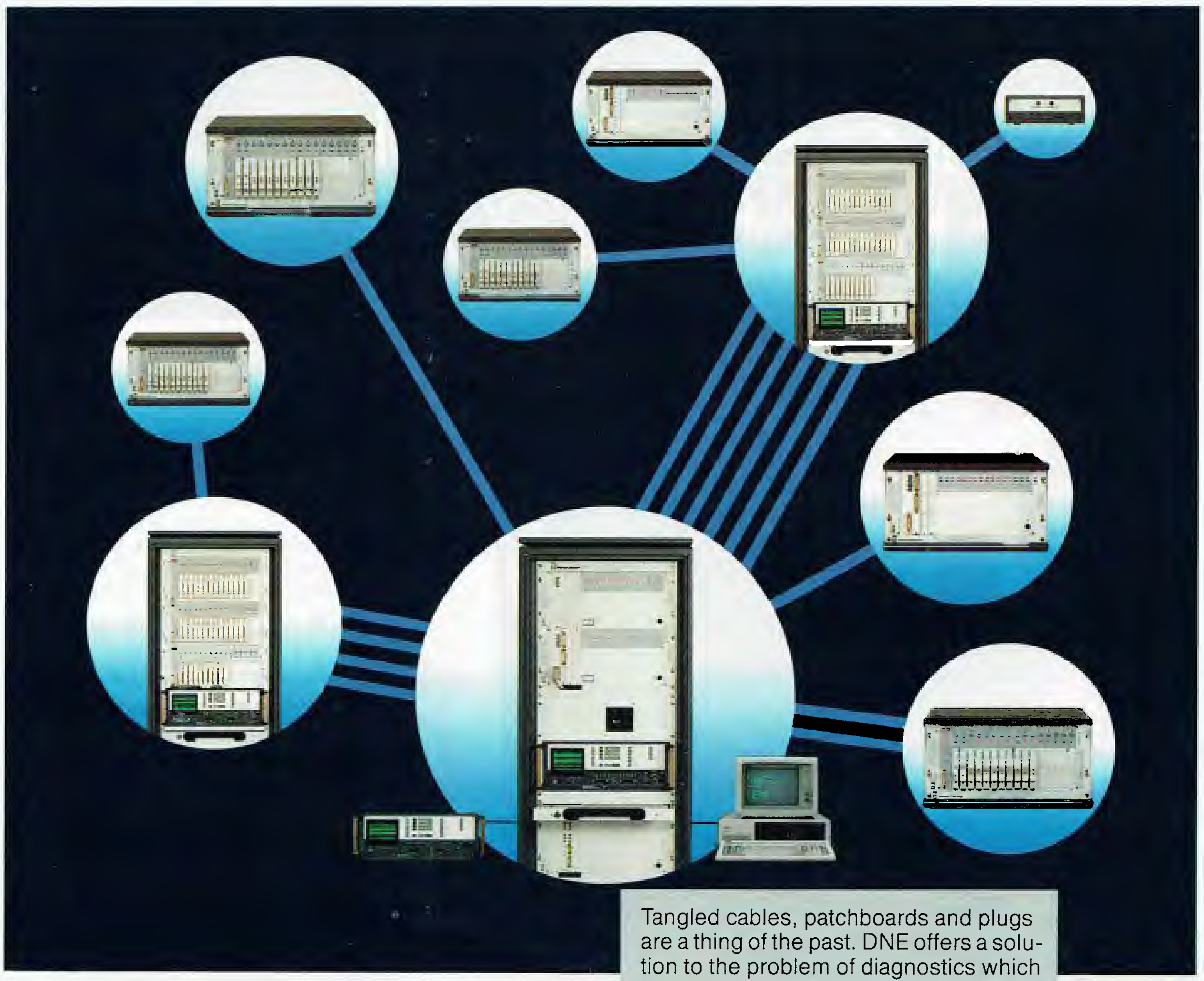
The Codex 2260 operates at both 9600 and 4800-bits/sec and uses trellis coded modulation at 9600-bits/sec to bolster data integrity and provide a 3dB increased immunity to line noise, the spokesman noted. The modem is also able to communicate with other modems not equipped with trellis but coding at 9600-bits/sec. The trellis scheme improves tolerance to unpredictable, disrupting line conditions, such as harmonic distortion and phase jitter, the spokesman claimed.

The 2250 operates at 4800-bits/sec.

The series includes a long haul echo canceller, which is said to compensate for amplitude and delay distortion to reduce error rate.

Included with the modems is an integral auto call unit. For asynchronous applications it responds to either the AT or Codex command sets. For synchronous applications the series can dial any one of nine stored phone numbers or allow for manual dialling, the spokesman said.

He added that for ease of configuration and use, four sets of user defined modem straps could be saved in non-volatile memory. The modems could also be strapped to automatically implement one of these configurations during a power-up. The phone list of nine entries, each containing up to 40 characters, was also stored in non-volatile memory.



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Joint trial for interface

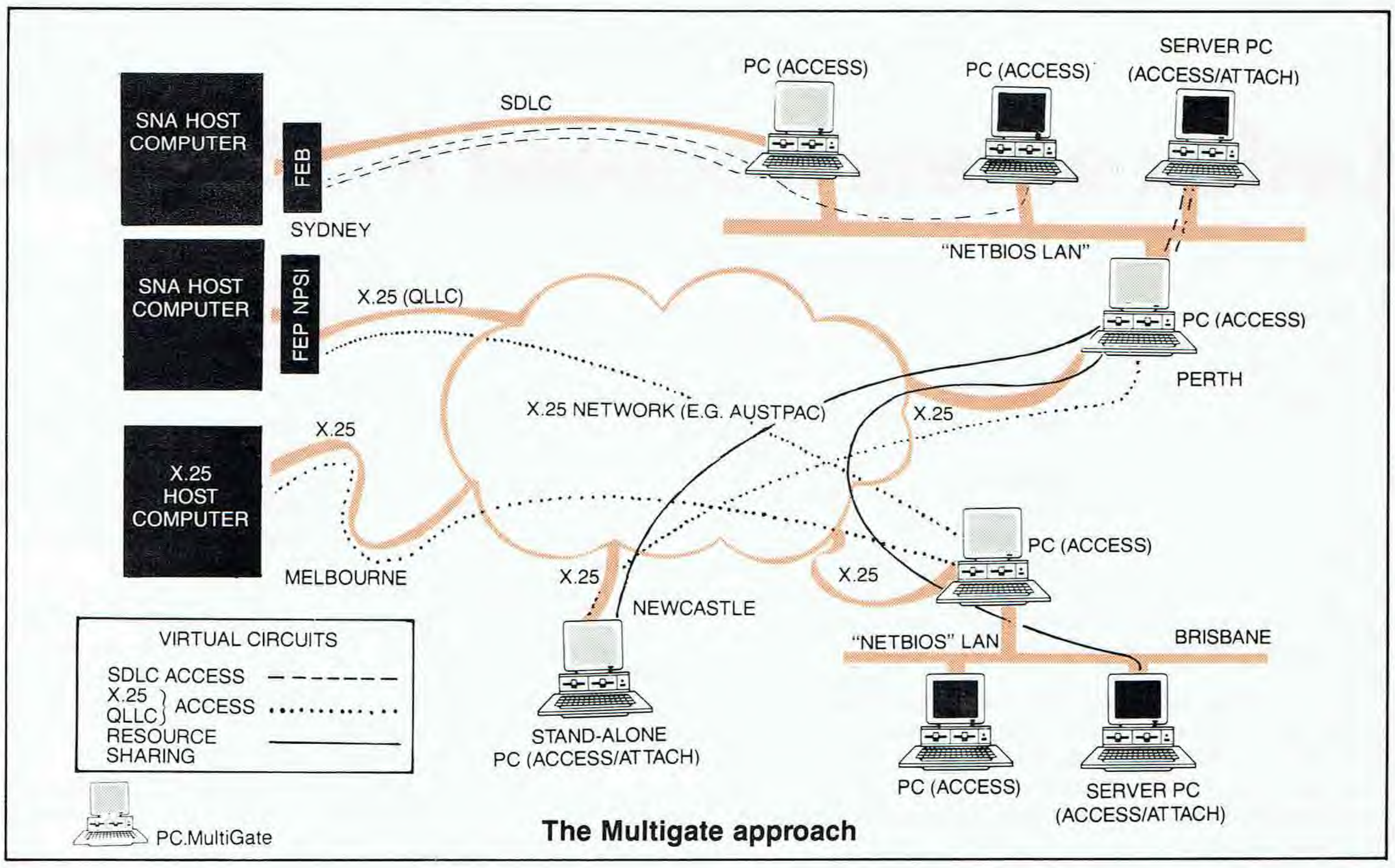
DIGITAL Equipment Corp and Cray Research have entered into a joint R&D agreement to test a high-speed interface between the Vax 8200 minicomputer and the Cray X-MP supercomputer.

The interface, expected to be available in June, is estimated to run at 2.6M-byte/sec.

Until now the connection has been performed by one of two devices — one produced by Cray itself, and the other by Network Systems Corp, also of Minneapolis. However, these interfaces are able to transmit data at only 50K-byte/sec, about 50 times slower than the new link.

The agreement is a logical extension of the DEC/Cray relationship, since 55 per cent of the 140 Cray supercomputer sites are also Vax sites, according to market researchers at Dataquest.

The Vax-Cray link is composed of a hardware module made by DEC that attaches to the backplane interface of a Vax 8200. Cray has modified its Vax/VMS Station software to support the device.



The Multigate approach

Tool gives gateways to networks

A PRODUCT that provides gateways to SNA and X.25 networks for IBM and compatible PCs linked on Netbios local area networks (Lans) has been released in Australia by JN Almgren Pty Ltd. The product, PC Multigate will also allow a remote standalone PC to have access to the same facilities and to similarly configured Lans.

PC Multigate comprises a Network Adapter card, which must be fitted to one PC in each network, and software to facilitate the SNA or X.25 links.

The card includes an MC68008 processor and provides all its networking functions without impinging on any of the other functions performed by the PC, a spokesman said. The network processor has sufficient power to provide up to 256 virtual circuits or sessions from the Lan to the host network. Buffering is accommodated within the adapter's onboard Ram.

For X.25 links the software required is the X.25 Network Interface Software Access/X.25 and Attach/X.25.

In conjunction with the Network Adapter software permits the connection of IBM PCs and compatibles to packet switching network as packet mode DTEs.

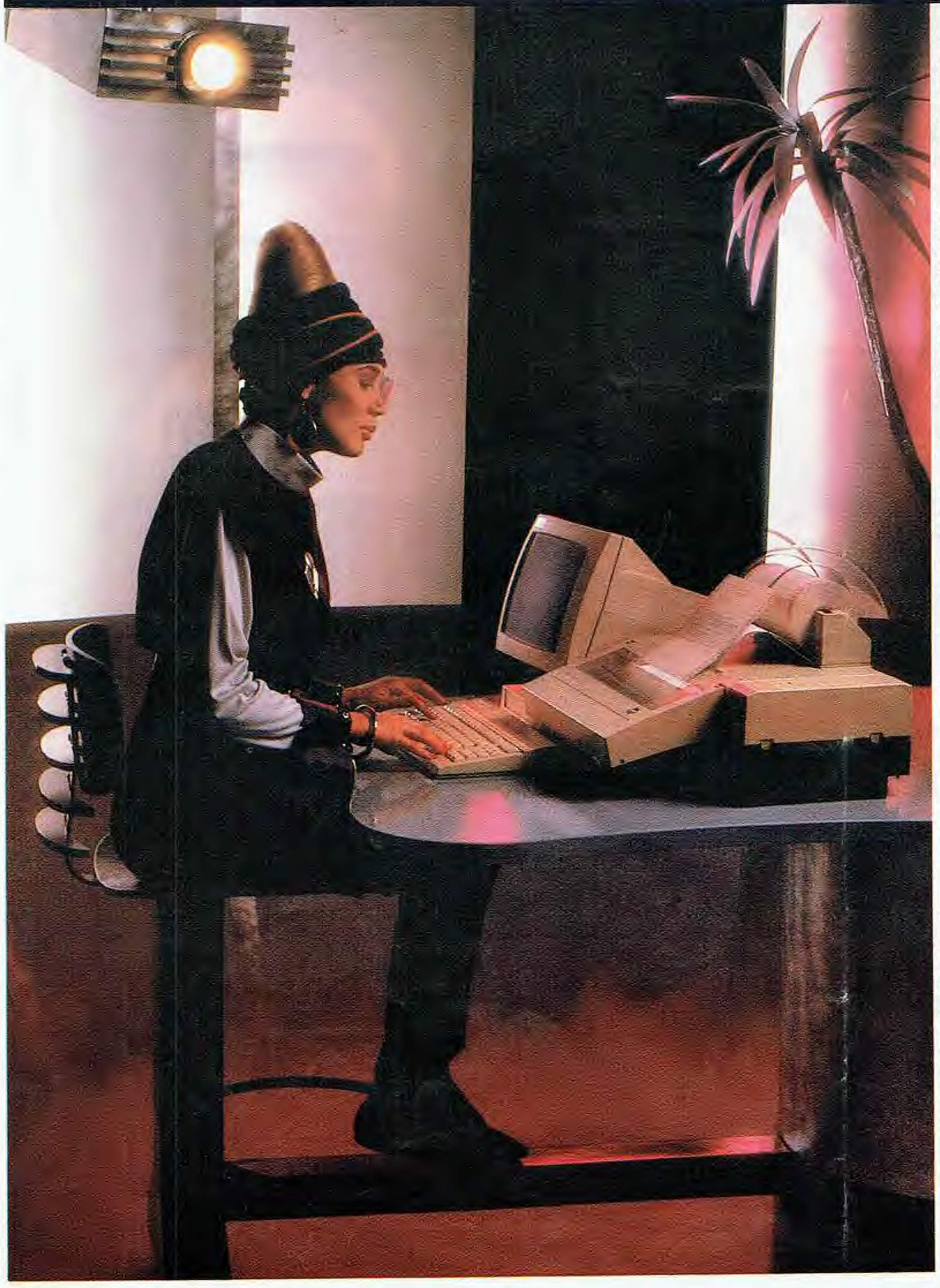
The Access/X.25 software is installed on each PC on the Lan (or a standalone PC equipped with the Network Adapter) to interact with the adapter installed in the Lan's nominated gateway PC.

The Attach/X.25 software allows wide area resource sharing between the Netbios Lans and standalone PCs.

For SNA links, the software required with the board is SDLC Interface, Access/SDLC and Access/QLLC.

The Access/QLLC software along with the SNA Control Unit emulation combine X.25 and SNA links making the SDLC facilities available over X.25 switching networks. Provided the host computer is equipped with IBM's Network Control Program Packet Switching Interface (NPSI), the PC Lan using Access QLLC may establish connections with SNA and X.25 hosts and with other Lans simultaneously, and then hot key between them, the spokesman claimed.

Prices for PC Multigate depend on the size of the Lan, but would extend from about $A2500 to $A8000.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Netcomm modem has traps for burglars

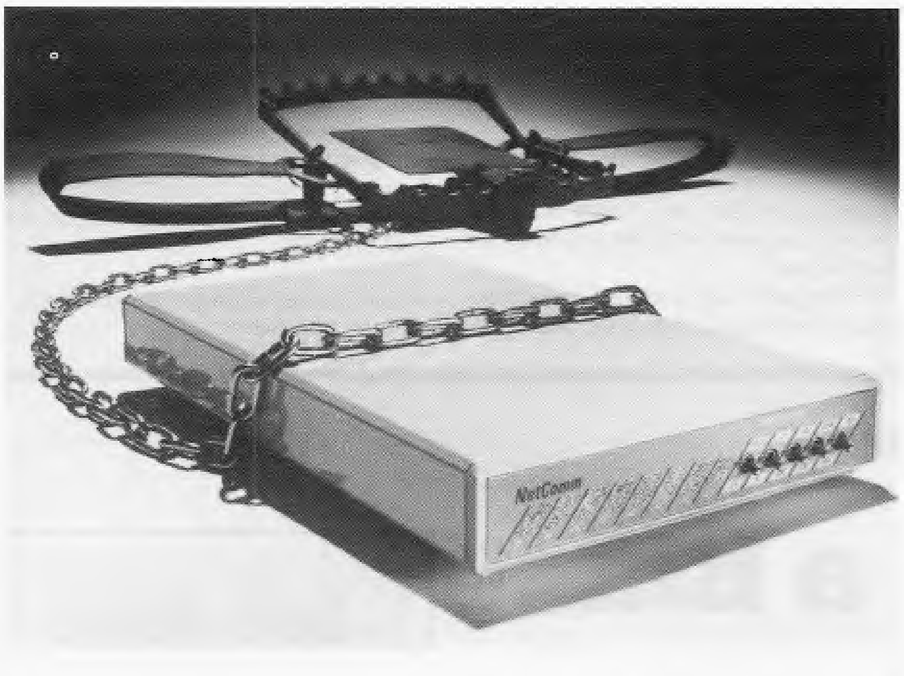
TWO MODEMS with features designed to counter the threat of unauthorised entry into corporate databases and electronic mail services have been released by Netcomm Australia.

A spokesman said the units, designed and engineered by Netcomm, aimed to provide increased security to corporate users operating from a fixed telephone address.

The Datalock modems operate on a system of automatic password checking followed by an optional redialling sequence. The answering modem automatically checks the identity of the caller against a number held in its memory. Connection is allowed only after both password and originating telephone number have been verified.

The Datalock products also support an ARQ protocol providing data error detection during transmission. Two of the modems operating together provide sophisticated automatic error detection, checking all data without requiring extra hardware or software for the personal computer, the spokesman claimed. Help facilities are included.

The Datalock modems are additions to Netcomm's Smartmodem 123 and 124 ranges. They can support both synchronous and asynchronous data communication at 300, 1200, 1200/75, or 2400 bits/sec, the spokesman said. Auto ranging and auto answer functions are included.



Applitek opens gate for both sides of the Unisys family

GATEWAY products that connect both sides of the Unisys Corp family through a local area network have been launched by Applitek Corp. The gateways, called Sperry NI10/G and Burroughs NI10/G, enable asynchronous terminals to access either type of host through Applitek's proprietary local area network (Lan) Unilan, the company said.

Based on Applitek's existing NI10 line of network interfaces, the gateways provide solutions to organisations whose users want to access both types of hosts from the same terminal.

A Unilan user that specialises in Defence Department specifications, nonprofit Mitre Corp, will consider the gateways for potential use in defence installations that have Burroughs and Sperry systems, according to Mitre engineer Lee La Barre.

"Applitek has replaced direct terminal-to-host links with its Unilan local area network, which offers an advantage in ease of moving devices around," said La Barre. "Burroughs does offer an Ethernet Lan connection, and Sperry computers can be linked to Ethernet through third-party vendor Bridge Communications, but Applitek's product may be unique in its ability to allow an asynchronous terminal to access both Burroughs and Sperry hosts."

Replacing direct terminal-to-host connections with Unilan increases maximum distance of the links from a few hundred metres to at least 30km more than the broadband version of the Lan. Unilan is a backbone network that supports baseband Ethernet 802.3 subnetworks and up to 60 assignable 10M-bit/sec broadband channels.

Proprietary protocols reportedly overcome the problem of increasing frequency of signal collisions on Ethernet Lans when distances between nodes go beyond a certain point.

The Sperry NI10/G Gateway uses a bisynchronous poll-select link to connect to either a Sperry DCP 10, DCP 20 or DCP 30 network controller, or to a Sperry Group Controller Secondary. It emulates Sperry's T-Mux terminal multiplexer when it communicates with the Sperry host.

The Burroughs NI10/G Gateway uses a poll-select link to connect to a Burroughs B874, CP3680 or CP2000 frontend processor. The gateway appears as one of the preceding Burroughs devices to a Burroughs ET1100, MT980 or TD830 terminal or to another Burroughs host. It provides Burroughs Display Station screen emulation for different types of asynchronous terminals.

Both gateways support up to 64 virtual circuits at a maximum speed of 9.6K bit/sec. Prices start at $US600 a connection for both the Burroughs and Sperry gateways.

Interface allows 15 instruments

A GENERAL Purpose Interface Bus (GPIB) interface that is said to allow any IBM PC, PC AT or compatible machine to be used as an intrumentation system controller has been released by Philips' scientific and industrial division. It allows up to 15 instruments to be interconnected to the system under the control of the PC.

The PM 2201 interface comprises an interface board that plugs into one of the PC's expansion slots, together with software and a user manual.

A spokesman said GPIB procedures were called by means of a high-level language addition to the PC's Basica or GW Basic interpreter and included all commonly used functions and commands.

Energy scanner

AN ENERGY management system that plugs into a phone socket at a customer's premises and communicates with a generating authority's central computer over an existing phone line, has been designed and built by Standard Telephones and Cables (STC).

The hardware comprises a small energy management terminal which is plugged into the telephone socket. The generating authority's computer can use the EMT to read meters, predict demand, and act accordingly by giving instructions to the EMT to switch various supplies on or off to balance the load, a spokesman said.

STC said this will allow supply authorities to automatically trim the amount of electricity being used at any time, so that generating equipment for an area will be cheaper to build and operate.

System 6000 boost

THE SYTEK 6000 line for networks of IBM personal computers and compatibles has been expanded with two extra network servers, an enhanced operating system, an electronic mail package, an SNA gateway, and a bridge to broadband Lans.

A spokesman said the System 6000 products are based on the Netbios standard, allowing them to work with IBM PC Network and IBM Token-Ring software and hardware and compatible products.

The new 6611 Network Server, which offers 75M-bytes of storage, is both a file and print server with a high speed disk drive, the spokesman said. It was specially configured to support the new Netware/6000 operating system, and includes a floppy disk drive, a keyboard, display and optional 60M-byte streaming tape drive.

Users with greater storage needs can now get 150M-bytes through the 6621 Network Server, the spokesman claimed. Sytek also offers a 150M-byte version of its standard server for users with other network operating systems.

The Netware/6000 operating system was adapted from Novell's Advanced Netware Version 2.0A.

Lan releases

TWO ETHERNET local area network servers running the TCP/IP (Transmission Control Protocol/Internet Protocol) high-level protocols have been released by Bridge Communications Australia for use in the DEC Vax environment. One is a single board Unibus server and the other is a compact server supporting up to 10 networked devices.

A spokesman said the integrated Vax Ethernet Communications Server (abbreviated to Ivecs-TCP/IP) board level server plugs into a single Vax hex-size Unibus slot. It emulates up to six DMF 32IO controller cards while establishing a direct connection to Ethernet, the spokesman explained. It is also claimed to provide connection to the Vax of up to 48 devices attached to the Lan directly or through Bridge servers.

The CS/200-TCP/IP is a compact general purpose server that connects four to 10 asynchronous or bisynchronous devices to a Bridge Ethernet running the TCP/IP protocols.

New barcode network

A NETWORKING system that links up to 32 laser scanning barcode readers to a single host computer port has been developed by Symbol Technologies International Inc and released in Australia by Barcode Technology.

A spokesman said the system is built on a master controller and a set of inexpensive satellite stations. Known as the LL/700/745, the network supports Symbol Technologies' own laser scanners or a series of low-cost contact wands without the need for extra hardware.

It is claimed to handle all popular barcode symbol standards with complete auto-discrimination.

The network can be programmed by users through a scan menu, host download or local VDU menu. It supports RS-232C, RS-485 and 20milliamp current loop.

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TRADE ENQUIRIES WELCOME

Hardware

HP unwraps 13 network products

By Bob Wallace

> *'This places Hewlett-Packard among the computer leaders offering networking capabilities that meet the key requirements of each company site'*

PALO ALTO, California — Hewlett-Packard is gearing up to announce a raft of network equipment this month, in what the company is billing as the most comprehensive networking announcement in its history.

On February 23, the company is scheduled to introduce 13 new products intended to address four application-specific network environments, including sales and service, business offices, manufacturing and engineering. At the heart of the announcement will be X.25-based products customers can use to build wide-area, private, packet-switching networks.

When combined with existing networking equipment, including Ethernet-type local networks, the products will enable HP to provide companywide data communications systems.

The products are the result of the realignment of HP Advancenet, the company's network architecture based on the International Standards Organisation's Open Systems Interconnect model.

"This announcement places Hewlett-Packard among the computer leaders offering networking capabilities that meet the key requirements of each company site," HP president and chief executive officer John Young said.

HP is deploying teams of network consultants around the world to work with customers to understand their business needs and translate those needs into networking requirements, the company said.

The HP X.25 private packet network consists of a family of switching nodes, asynchronous and synchronous packet assembler/disassembler devices (Pad), X.25 line concentrators and a network management system based on a HP 9000 technical workstation.

"Our standard-based X.25 network solution can integrate multiple vendor communications — including SNA — and offers the additional connectivity, cost efficiencies and network management capabilities that companies, distributing information among remote functional areas, require," the general manager of HP's Information Networks Group, William Roelands, said of the wide-area network offering.

HP-installed private X.25 networks are claimed to reduce corporate monthly communications line costs by up to 50 per cent, depending on requirements.

The network systems will range in price from $US100,000 to several million dollars.

Other products expected to be unveiled include:

■ The HP 2334A Plus multiplexer, a Pad that enables up to 16 devices located remotely from a computer system to access remote applications or data devices through a leased-line or X.25-based net.

The device typically provides a performance improvement of 25 per cent, increased reliability and faster configuration as compared with the previous HP 2334A model.

■ Working with Connections Telecommunications, of West Bridgewater, Mass, HP has developed two network design software packages. The tools are supported on the HP Vectra PC and are available from Connections.

The Distributed Network Design System helps generate cost-efficient X.25 networks and runs on the HP Vectra PC or the IBM Personal Computer AT with Microsoft's Windows software. Users input information about system, switches, throughput, desired response time and costs of a given network.

The Multipoint Network Design System helps generate optimised terminal-to-computer connections and runs on the HP Vectra PC or the IBM Personal Computer. It costs $US15,000.

The new design tools enable users to perform a series of "what-ifs" and delete communications links until the X.25 network or terminal-to-system configurations are optimised for reponse time and cost. In addition, the tools provide detailed information on communications carriers and assist the user in selecting the carrier that best meets the user's network requirements. The Distributed Network Design System is priced at $US10,000.

● *Bob Wallace writes for* Network World, *our US sister publication.*

Software

Dial-up linkage is a Blast

COMMUNICATIONS Research Group has released software that ties remote minicomputers and PCs to IBM mainframes over asynchronous dialup links. The IBM mainframe-resident Blast Host package supports bulk file transfers between minis and PCs equipped with other Blast packages. A company spokesman said the company has Blast versions available for 31 different operating systems.

The remote minis and PCs connect to a host mainframe through protocol converters, IBM 3725 and 3705 frontend processors outfitted with IBM's Network Terminal Option software, or X.25 packet-switching networks at speeds to up to 9.6-bit/sec.

Running as an application under IBM's VM/CMS and MVS/TSO operating systems, Blast Host converts Ascii data formats to Ebcdic data formats. Minis and PCs use local Blast packages to log on to the mainframe and control a Blast Host session. The host-resident package is designed to support error checking of files transferred over X.25 packet-switched networks as well as provide an automatic connection to the mainframe over dialup packet-switched networks.

The Blast package itself provides a VT100 terminal emulation function that, when passed through a protocol converter, will make a PC appear to the host as an IBM 3270 terminal.

Also included with the Blast Host package is a dialup management system that watches and logs transactions. It also provides the same password and security functions to the remote processors as are distributed to directly attached terminal users.

The Blast Host package for an IBM mainframe is priced at $US5500. A minicomputer-resident Blast package ranges in price between $US495 and $US1295.

DIA comes to the M24

IN a development that will allow its M24 microcomputer to exchange documents with IBM minis, Olivetti has agreed to license The Orion Group's document interchange architecture (DIA) facility for implementation on Olivetti computer systems.

DIA specifies protocols for packaging a document that can then be exchanged with systems that support DIA protocols. These include IBM System/36 and /38, IBM's Distributed Office Support Systems (Disoss), and a growing number of non-IBM computers.

While the licence allows Olivetti to implement Orion's DIA software on any of its systems, the company initially will target minicomputers distributed in Europe and the M24, which Olivetti makes for AT&T as the PC 6300.

The MS-Dos-based micro can use IBM 3270 terminal emulation boards to access IBM hosts, but the DIA software provides direct document exchange between AT&T's micro and IBM systems using the DIA format, according to Orion Group president Paul Rampel.

Support of DIA will also enable Olivetti computers to exchange documents with non-IBM systems that support DIA and to access library and distribution services on IBM's Disoss protocols.

Olivetti has announced no plans to license other IBM-based communications software offered by Orion, in particular the LU6.2 and PU2.1 peer-to-peer communications packages that would enable Olivetti systems to participate as peers in a Disoss network.

Olivetti is the second European manufacturer to license Orion's IBM SNA based software. Orion announced a similar contract with Philips International last September.

Network version of Multiplan

MICROSOFT has released a network version of Multiplan, its spreadsheet for the IBM personal computer and compatibles. The release includes a spreadsheet auditor, which Microsoft said can record macros upon entry and can directly import Ascii files, enabling access to many microcomputer database and database and large system spreadsheet data formats.

On a network, Multiplan Version 3.0 supports multiple users with file locking, password protection and data encryption.

Desktop publishing from ACA

SCLASERPLUS, a PC-based desktop publishing program which integrates text and graphics with extensive formatting capabilities, has been released by ACA Pacific Technology. Sclaserplus combines a built-in text editor, advanced formatter, an icon (symbol) editor, and a screen snapshot facility. Professional publishing features like kerning, leading, tracking, hyphenation, micro-justification, and a font manager are included. The Sclaserplus text editor offers automatic search and replace, a spelling checker, file encryption, electronic bookmark, dual editing cursors and automatic tabbing. The Sclaserplus package requires at least 256K-bytes of Ram and a double-sided floppy disk drive or hard disk running Dos 2.0 or later.

Sclaserplus costs $A825.

Soft Spots

THINKING SYSTEMS has released The Service Manager (TMS), a PC package which logs incoming work and tracks its progress. TSM handles many of the needs of service operations, including service histories on all clients and products, special invoices for the warrantor, reporting on all repair jobs outstanding, management information on job service cards and orders, and a technician's time-logging module. TSM handles sales tax, has an integrated parts ordering system, password protection, enquiry and reporting facilities archiving of aged data, and does not need pre-printed stationery.

AN EMULATOR package that enables users of Arcnet token bus networks to run applications designed for IBM's Netbios has been released by New York company Standard Microcomputer Systems Corp. The $US195, two-disk program allows four Arcnet users to run applications written for Microsoft's MS-Net network operating system, which is used by IBM in its PC Lan operating system. The Netbios emulator resides in memory as a background program enabling the user to run applications in the foreground.

IBM AUSTRALIA has released Chefs/36 (comprehensive hospital environment food system), a software package for hospital catering managers and dietitians which runs on the IBM System/36. Chefs/36 has two components: one for the kitchen to assist in menu design, preparation and tabulation of patient meal orders, and the other for the dietitian. The dietary section monitors the nutritional quality of patients' food, including specific dietary requirements, based on Department of Health food tables. Chefs/36 can be interfaced with IBM's Himas system (hospital information, management and accounting system) or run standalone with its own patient master index facility. Another feature of Chefs/36 is the production of picking slips of raw materials by location.

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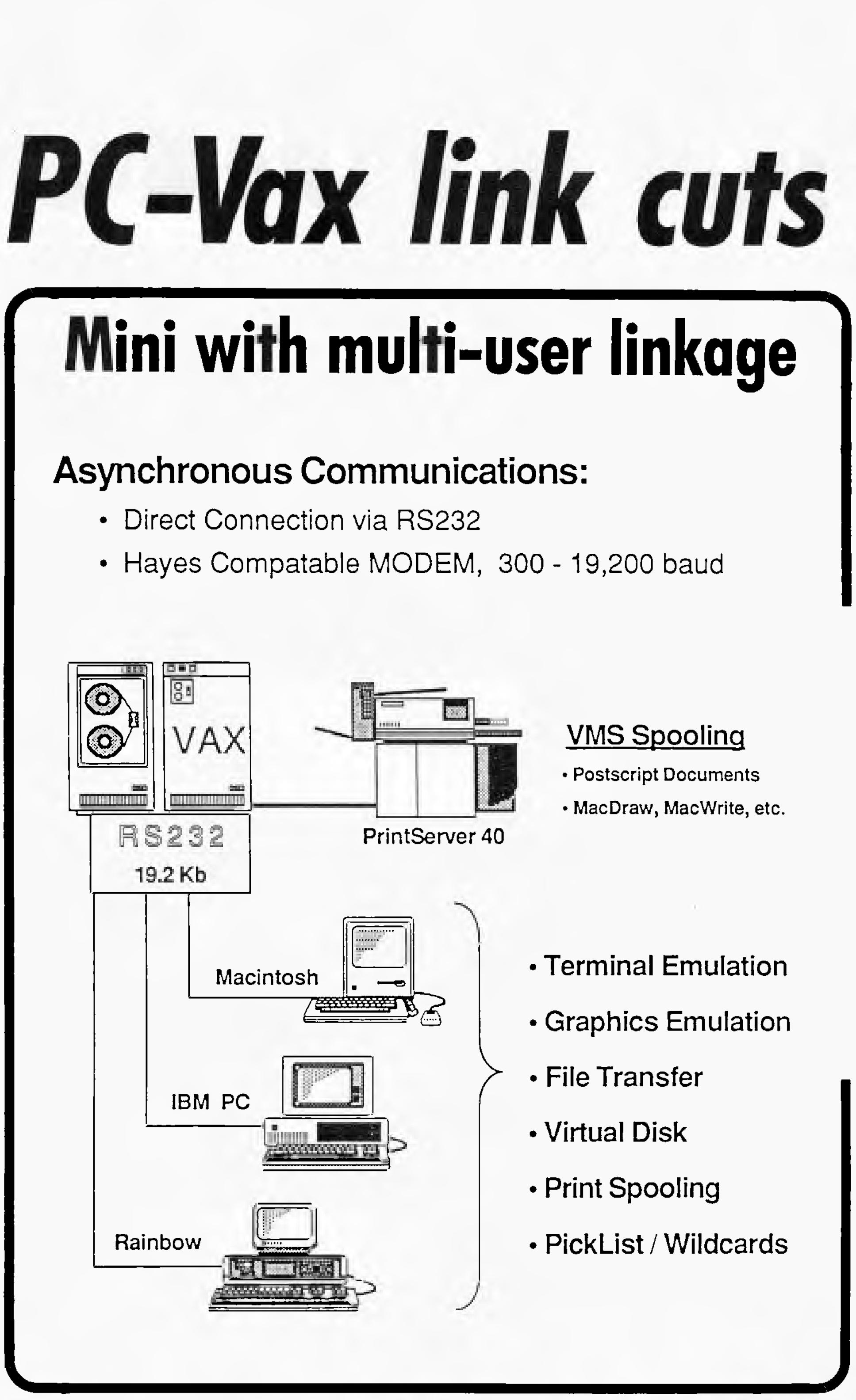
PC-Vax link cuts in Apple


Mini with multi-user linkage

THE PC LINK software which allows communications between PCs and DEC Vax minicomputers has been enhanced to allow communications between Apple's Macintosh and Vax minis. The product is distributed in Australia by Tri-Communications.

PC Link Version 3.0 allows the Vax to function as a transparent disk server for the Mac, allowing users to access Vax files as if they were on a local hard disk drive.

When a virtual disk is activated, an icon appears on the Mac desktop and can then be treated as if it corresponded to a disk in a separate physical drive. Each user reportedly can simultaneously access up to four such devices from a Mac through normal applications and desktop functions.

The spokesman said software is provided to enable complete access to a Mac virtual disk image from the Vax operating system (VMS or Ultrix), including the ability to copy Vax files into and out of the virtual disk. Since a similar facility is already available for IBM PCs, PC Link provides a straightforward mechanism for interchanging information among the Mac, PC and Vax environments, the spokesman said.

Other functions of PC Link include terminal emulation (VT100, VT220, Adds Viewpoint 60 and Televideo 950), file transfer (Ascii, binary and MacBinary) and command file capabilities.

PC Link costs $A4000 (plus tax) for a Vax licence that will support up to five concurrent users. PC Link will be further enhanced within three months to offer Ethernet support. It will provide all PC Link core features over Ethernet, the spokesman said. Extra benefits will include data transfer to the Vax at 800k-bits/sec, and the ability of a PC user to establish multiple terminal sessions.

Personal Pyramid

PRODUCTS to integrate a variety of PCs with Pyramid minicomputers which provide centralised file and compute resources have been released by Pyramid Technology Australia. Machines that can be linked into the system include IBM PCs and compatible machines, Apple's Macintosh, and Sun Microsystems workstations.

A spokesman said the Pyramid Connection consists of gateway communication software and services that provide networking for personal workstations.

The products are:

☐ An Appletalk/Ethernet gateway, provided by the Kinetics Fastpath gateway, each of which will connect up to 31 Appletalk nodes to the Pyramid Ethernet.

☐ Pyramid Appletalk Services, implemented by the Appletalk protocols within the Pyramid OSX operating system kernel.

☐ Appletalk multiwindow terminal, which allows Macintosh users to gain direct access to applications running on the Pyramid host. Pyramid offers the Kinetics K-term Term program, which provides multiple Mac windows, each emulating a VT 100 terminal.

☐ Tops for Unix, which provides transparent file access to Mac users via the Centram Tops series of products.

☐ Tops for the Macintosh, which is a distributed file system for the Mac. Using Centram's Tops for the Mac, users gain access to files stored remotely on the Pyramid host as if they were on the local Mac.

☐ Tops for the PC is a lowend transparent distributed file system for IBM PCs and compatibles. It reportedly is compatible with Tops for Unix and Tops for the Macintosh, and allows users to share and gain access to personal computer data on the Pyramid host.

☐ Pyramid Network File System (NFS), originally developed with Sun Microsystems, allows workstations to transparently gain access to the disk storage of the Pyramid minicomputer.

☐ The PC-NFS transparent distributed file system for IBM PCs and compatibles is said to provide better performance than Tops.

PK Harmony has Pick of the files

A DATA LINK and terminal emulation system that allows connection of IBM or compatible PCs to Pick operating system host machines has been released by Techcom KSH Systems.

Called PK Harmony, the link reportedly provides access to files, reports, data and text on the Pick host and allows all or selected information from those files to be captured into commonly used MS-Dos based packages.

The data transfer can be controlled by the PC or the host and transfer procedures can be saved for re-use. Numeric and text data can be selectively reformatted into PC formats such as Lotus 1-2-3, Symphony, dBase II and III, Framework, Pick compatible files and other PC formats.

The Hi-Pol transfer protocol is used to ensure accuracy of data transfer.

Bridge for IBM PC to Ethernet

A PC-DOS terminal emulation and file transfer program that integrates IBM PCs and compatible machines into an Ethernet Lan network running the Transmission Control Protocol/Internet Protocol (TCP/IP) has been introduced by Bridge Communications Australia.

Bridge's TCPTerm software lets PCs emulate VT100 terminals and communicate with asynchronous ports, 3270 SNA sessions and a variety of hosts, such as DEC Vax minicomputers and Sun workstations based on the TCP/IP protocol set.

TCPTerm supports the standard TCP/IP Telnet (terminal to host communication) and FTP (file transfer protocol) layers, maintaining compatibility with other TCP/IP based devices, he claimed. TCPTerm operates with PCs attached directly to the Ethernet Lan using a standard Etherlink network controller board.

"TCPTerm effectively turns the PC into a TCP/IP based workstation that can perform high-speed file transfer of both binary and text files to and from other networked TCP/IP devices," the spokesman explained. "It also provides full access to such network management features as logical name services, network map displays and the monitoring of error and performance statistics.

TCPTerm is compatible with Bridge TCP/IP network servers as well as with other Ethernet-based TCP/IP hosts and workstations.

Soft Spots

MACINTOSH micros can emulate Hewlett-Packard terminals for connection to HP 3000 and HP 9000 hosts with a new program called Reflection. The product, from US terminal emulation specialists Walker Richer & Quinn of Seattle, reportedly provides complete emulation of the HP2392A series terminals including block mode operation. It contains the same error-checking file transfer software the company provides with MS-Dos versions of Reflection and is due on the US market this month for $US199.

* * *

VITALINK communications has introduced an entry-level version of its Translan hardware/software bridge product for linking Ethernet 802.3 networks. Translan IV, unlike its predecessors, controls only a single point-to-point link, cutting cost and boosting performance. The $US12,000 product can transmit at data rates from 9.6K-bits/sec to 2.048M-bits/sec. Standard Ethernet connection is used to link up the local network, with remote networks reached via data lines or satellite. At present the connection to the remote end supports only CCITT V.35, but RS-232C support is promised for early this year.

* * *

A SUITE of PC packages designed to connect remote personal computers over telephone lines or packet-switching networks has been released by Californian maker DA Systems. The programs, which run under Unix workalike QNX, are centred on the Isobridge package which automates transmission of electronic mail and Ascii or binary file transfers between similarly equipped remote PCs. An Isobridge/Hub option allows nodes to act as store-and-forward devices. Isobridge runs as a background task under QNX, which also contains a PC-Dos emulator that permits users to run Dos applications as tasks. It uses AT commands, offers 10 levels of message priority and can both send and collect electronic mail automatically. Basic system price is $US595, a network version costs $US1190 and the hub option $US200.

* * *

A PC implementation of the IBM mainframe terminal protocol CICS has been introduced by Realia Inc of Cobol fame. Real CICS is claimed to give programmers the chance to prototype applications on PCs and compatibles, including laptops. The $US995 development system "would be useful to companies that don't want to retrain their field employees when they already know a CICS-based application," said a Realia spokesman.

* * *

IDAPS Information Services has announced it will be enhancing two of its library management systems. The Librarians online cataloguing system, which has been developed over the past 17 years, will now be extended to allow libraries to make partial global changes to their subject and author files. The Lion online acquisitions system will be enhanced to simplify financial management, allowing adjustments to a library's funds when an order is cancelled or cannot be filled or is returned to the supplier.

* * *

DOMAIN COMPUTER has released its Workstation Publishing Software (WPS), which runs on Apollo technical and scientific workstations and allows technical professionals to document their work. WPS is based on the Interleaf publishing software, but includes enhancements such as high quality screen graphics, cut and copy facility, spelling checker, and picture editor. WPS also supports Postscript, enabling a wide variety of output devices to be interfaced, including the Apple Laserwriter, the Apollo laser printer, linotype typesetters, QMS's PS800, and Texas Instruments printers.

How Chase AMP met its network deadline

An insistence on simplicity, proven technology, and clear objectives enabled Allen Hyde to achieve remarkable results in a short time. Noel Bennett reports.

Allen Hyde . . . speaks highly of Wang terminal's communicating facilities.

ALLEN HYDE still considers getting the Chase AMP Bank operational on D-Day, September 16, 1985, to have been a "remarkable" achievement. And while in no way underplaying the long, dogged and perspiring work that undoubtedly went into the project, it seems that the overlay for the successful completion was set in the beginnings by the determination to meet defined objectives and "Keeping it simple".

Simplicity has a cost, but for AMP Chase it paid off with a fully working network by the deadline set, and with the opportunity now to reduce transmission and other "on-time" cost penalties. Hyde said the network architecture was laid down in late 1984 by Dr Florian Mikulski, international telecommunications manager for Chase, who stayed with the project for a year.

Mikulski's overall strategy was to implement basic information services in all new facilities of the bank, establish high performance, reliable capabilities to support all functions and to operate a message and payments distribution facility with highest levels of control and productivity.

Mikulski took into account Australia's geography, general population distribution and availability of skills, the work ethic, computer capacity and telecommunications services and regulatory issues. Out of these considerations came decisions on:

- Staffing: emphasise quality rather than quantity.
- Technology: use only that already known which gave known results to avoid risks associated with new developments.
- Premises: (sometimes overlooked in telecommunications planning) appointment of a telecommunications manager to work directly with the architect and the premises team.
- High productivity design: methods and procedures analysts and office automation training staff recruited from the very beginning.
- "Day One" fully automated: Employment of technology had to be superior to that of the bank's competitors.

Pertinent risks included timely completion of tailoring the imported Chase systems and the ability of Telecom to supply the dozens of leased circuits required, considering so many other new banks were opening at the same time.

Projects desired three to four years out, but which had to be deferred, included a nation-wide packet network to handle multiple protocols and implementation of the IBM internal cabling plan.

Also, Mikulski considered that while the rate of growth of the business was uncertain, choosing computer facilities which were limited in capacity was far more dangerous than one which was over generous.

With telecommunications, reliance on existing services was considered to be a necessary expectation although the degree to which the carriers would agree to networking approaches, customer access and user technical analysis of network performance were seen as potential problems. With this background of initial design, assessment, choice and consequent implementation the Chase AMP Bank Ltd was ready to roll when the Treasurer, Paul Keating, accorded the bank a banking licence.

Hyde, who came to the bank after a short period with the State Bank of NSW and who had previously spent some 17 years with Telecom, now superintends a network comprising the following CPU elements:

IBM 4381: Front-ended by an IBM 3725, supports direct deposit accounts within wholesale banking, but predominantly handles consumer banking operations.

IBM System/38: Wholesale banking, including the Unicore package, comprising foreign exchange, general ledger, customer facility system, customer profitability analysis system and budget. This computer also supports the payroll system, fixed assets, accounts payable and safe custody.

IBM Series/1: Handling the Swift, telex and Chase International Message Network.

> 'Simplicity has a cost, but for Chase AMP it paid off with a fully working network by the deadline set, and with the opportunity now to reduce transmission and other "on-time" cost penalties'

Wang VS machines: For office automation and also integrated into the network via a gateway software running on VS 300 to provide access from the one terminal to other Wang machines and the 4381 and System/38 and Series/1. Geographically, the network combines Sydney, Brisbane, Melbourne, Adelaide, Perth and Hobart.

Illustrating how initial decisions made to quickly get the network up and operating with least risk are being changed to prune costs and improve efficiencies, the present Melbourne-Sydney point-to-point link is being cut over to Telecom's 48-bits/sec Netplex service with Almgren AS65 multiplexers. This is one of 14 such links to various locations.

On present estimates, this move should result in savings of 50 per cent. Other "cleaning up" includes eliminating the System/38 component in the network by implementing the Host Command Facility to provide a pass-through facility from the 4381 to the System/38. In the near future it is intended to implement the L.U.6.2 facility on the SNA network so providing terminal access and transparent batch printing on the network from the System/38 through the 4381 without operator intervention.

Three Tymnet packet switching nodes in Sydney and Melbourne provide access to Chase data network, comprising some 70 nodes worldwide. The Series/1 machine hosts customised Manoff software, an interbank financial transfer system, a link into Swift, the international payments transfer system, as well as telex facilities and access through the Tymnet node to the Chase message network.

As with the Rolm PABX's installed, the Wang VS 100 machines were chosen for office automation and to support the domestic money market operations as Chase is an extremely heavy user of Wang equipment in the US.

In the money market and foreign exchange dealing room at the Qantas building, Sydney, British Telecom's city business system provides the dealers with single-touch, voice access to other dealers and brokers. Reuters and Telerate information is delivered on four screens, each shared by two dealers, and a Wang screen will enable the dealer to access any one of the systems supported by Wang network — for example, the domestic money market operations. Hyde speaks highly of the multi-access communicating facilities of the Wang terminal so that, for example, a manager in Melbourne can access the VS 100 communications gateway in Sydney and so gain entry to applications on the 4381, System/38 and Series 1 as well as into the other Wangs.

Other terminals for business use include IBM Personal Computers with asynchronous communications and central protocol converters and telex dual port controllers.

While data carriage is of utmost importance, voice still plays a fundamental role.

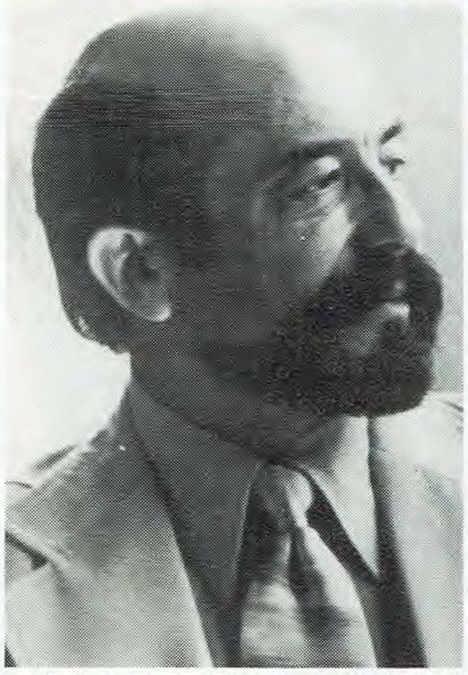
In customer services, the bank has introduced a "bank by phone" service where branches have been integrated into Chase's national voice network and has also introduced a centralised attendant service in Sydney.

Hyde, who expects to boost his staff levels to 14 this year, believes that the value of an initial underlying philosophy of not engaging in research and development has been proven by Chase AMP's experience.

THINK TANK

Year of the Ram

Interchip communications are one of the biggest bottlenecks in applications processing, but help is on the way from Japan's telecommunications giant, Nippon Telegraph and Telephone Corp, according to our guest columnist, Charles Lecht.



- *Charles Lecht . . . "I/O logjam will be broken".*

AT THE forthcoming International Solid-State Circuits Conference to be held in New York in February, Nippon Telegraph and Telephone Corp (NTT) will announce the creation of a 16M-bit dynamic random access memory (Dram) prototype. With circuit widths as small as 0.5 microns and an access time reportedly less than 100 nanoseconds, I call this the "dream Dram."

I refer to it this way because it fulfils the dreams of the semiconductor world to produce submicron (less than a millionth of a metre) circuits on a chip, group them on a single chip, and access them in times nearing those in the picosecond (trillionths of a second) world.

Observing that 16M-bits is the same as 2M-bytes, we note that at 1-byte a character (which is the case for English), 10 characters in a word, 300 words a page, the dream Dram could contain more than 666 pages of English text.

Back in the mid 1950s, it took 400cu ft to house 1 million characters of memory for the IBM 650 computer. Between 1959 and 1964, this had dropped to 100cu ft, and by 1971, to 8cu ft. With the introduction of the metal oxide silicon (Mos) 2K-bit (250 characters) chip in 1972, the same one million characters were capable of being housed in a single cubic foot.

From then on, until the end of the decade and into the 1980s when the 256K-bit (32,000 characters) Dram became commonplace, the volume needed to contain a million characters slid to less than a 6in cube.

Just two short years ago, prototype 1M-bit (125,000 characters) chips emerged, which are today routinely manufactured in the US and Japan. Since only eight of these are required to obtain a million characters of memory, a cube less than 2in on a side suffices to house one million characters. Now we can truly appreciate the NTT dream Dram's position in the scheme of things — two million bytes in the space required by a single chip!

It is a bit much to believe that today's 16M-bit dream Dram will see practical usage before the 1990s but I would not wager too heavily against it. No one expected the assembly-line manufacture of 1M-bit chips to occur in the mid-1980s. The prospect of having two million byte chips available in a desktop is exciting.

True, hardware architectures for desktops must change to make most efficient usage of chips with capacities above one million bytes, and a lot of new software will have to be created. But this is a minor detail; the benefits to be obtained through large, high-speed memories far outweigh the headaches caused by their incorporation into tomorrow's systems.

Hot Lips

For those large systems users, the appearance of fast Ram facilities means that users can expect incredible speed increases in Mips (millions of operations per second), Flops (floating-point instructions per second) and Lips (logical inferences per second). Since roughly two thirds of the delay time in applications operation is caused by interchip communications, increases in the number of circuits that can be engraved in one chip have a big payoff.

The usefulness will be evidenced in all the classic supercomputer applications — such as nuclear energy, weather, chemistry, airframe simulation and artificial intelligence — which will be greatly enhanced as chips increase in capacity.

In my mind's eye I envision friends at places like Lawrence Livermore Laboratories and Los Alamos National Laboratories as one might imagine a group of space pilots awaiting the day when the proper vehicle would arrive for them to travel to "inner space" to test their theories on what they may find on arrival.

With the appearance of NTT's 16M-bit dream Dram, we have further reason to hope that the problems caused by memory size and speed limitations for all ranges of systems are on their way to being solved. And if things proceed as they have in the past, we can expect further dream Drams: a 64M-bit chip followed shortly by one with a capacity of 256M-bits. After that, we would not be too surprised with the announcement of the first gigabit dream Dram — a billion bits on a chip (125,000,000 characters).

It is my bet that these will appear well before the end of the century. And with this, the often spoken of I/O logjam will have been resoundingly broken. All the data we may ever need will become available on demand and as fast as we want it.

When we have the capacity to receive realtime right anwers to all the questions we care to ask (and we do so only to witness the massive file of nonsense we have created), we will not spend more than a picosecond to turn off today's Information Age. With this, we will herald the arrival of the Question Age — one dedicated to providing the right questions.

- *Charles Lecht is chairman of Lecht Sciences Inc, Japan, a Tokyo-based software think-tank specialising in graphics.*

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